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FOOD FACTS

**FOR
FOOD
SERVICE
SUPERVISORS**

1985

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THIS IS A TECHNICAL ASSISTANCE PUBLICATION (MANUAL) OF THE U.S. DEPARTMENT OF AGRICULTURE, FOOD AND NUTRITION SERVICE, FOOD DISTRIBUTION DIVISION.

ALTHOUGH INTENDED PRIMARILY FOR USE BY INSTITUTIONS (CONGREGATE FEEDING ESTABLISHMENTS) OF ALL TYPES, THIS PUBLICATION CAN ALSO BE USEFUL TO FOOD SERVICE OPERATORS AND MANAGERS IN THE PRIVATE SECTOR.

THIS MANUAL CONTAINS USEFUL AND INTERESTING INFORMATION ABOUT FOOD, FOOD QUALITY AND USE. THE "FOOD FACTS" PRESENTED HEREIN ARE INTENDED AS A COMPLEMENT TO, BUT NOT A SUBSTITUTE FOR REGULATIONS, POLICIES AND GUIDELINES DEVELOPED BY FNS AND OTHERS RELATING TO NUTRITIONAL REQUIREMENTS, RECOMMENDATIONS FOR MEAL PATTERNS AND SERVING SIZES AND FOOD QUALITY STANDARDS.

THE MANUAL IS COMPREHENSIVE AS TO SCOPE OF ITEMS, INCLUDING SOME ITEMS WHICH ARE PERIPHERAL TO INSTITUTIONAL FEEDING, BUT EXCLUDES SOME ITEMS, SUCH AS FILET MIGNON, WHICH ARE TRADITIONALLY ASSOCIATED WITH THE RESTAURANT TRADES.

THE RESPONSIBILITY FOR THE CONTENTS OF THIS MANUAL IS THAT OF THE CONTRACTING AUTHORS.

PREFACE

The information presented in this manual was developed by the Food Industry Services Group under contract with the United States Department of Agriculture, Food and Nutrition Service, Food Distribution Division. The information was developed in response to numerous requests from public institutions and congregate feeding programs of various types.

This manuscript is one of a series of manuals prepared for the USDA - FNS as a part of a Technical Assistance Program to help food service supervisors throughout the United States. The Technical Assistance Manual Series is identified as follows:

- Volume I Catalog of Specifications - 260 pages
- Volume II Contract Purchasing - Variable Cost - 310 pages
- Volume III Food Facts - 585 pages
- Volume IV Directory of Information Sources - 565 pages
- Volume V Storage and Care of Food Products - 55 pages
(This is an excerpt from Volume III)

Although the research funds for the compilation of the manuals were provided by the U.S. Department of Agriculture, printing and handling costs are to be assumed by the end-users. Copies of the manuals may be obtained directly from the contractor, whose address is shown in the FOREWORD or it may be possible to obtain copies from your Regional FNS Offices.

These manuals are designed to represent the latest sources of information which we hope will strengthen your food service management endeavors.

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FOREWORD

This manuscript represents one of several manuals produced by the Food Industry Services Group for the Food Distribution Division of FNS. These publications are designed to provide technical assistance to food service supervisors for improving the procurement and handling of food products.

Copies of the manuals may be obtained at modest charges from the contractor. The assessed charges include costs of printing, handling and mailing at book rates, promotion and advertising. Revenue from the sale of the manuals may be used to revise and enlarge the scope of the manuscripts. If you wish to find out about charges, place orders, or ask questions concerning the manuals, please contact:

FNS Technical Assistance Manuals
Food Industry Services Group
James A. Mixon and Associates
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Although this manual is directed toward institutional (and school) food service supervisors at state and local levels, it will also be useful to commercial distributors and packers, food service operators in the commercial sector, as well as administrators and others concerned with food distribution and utilization.

James A. Mixon and Associates
FNS Contractor

FOOD FACTS
FIRST EDITION 1985
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Product knowledge is an essential ingredient for success in food service supervision and management. One must have an intimate understanding of "what is out there" before intelligent decisions can be made in food purchasing. And intelligent food purchasing is the key to patron acceptance of foods and realizing economies in food preparation and service.

Managers must manage. They must know what to buy and what to avoid. Good product selection can result in the liberation of dollars which can be used to upgrade the plated quality of meals, in general, increase patronage and promote an all-round successful operation.

This manual is directed toward making better managers out of capable in-place personnel. It also has eccentric value as a tool for training newcomers in the basics of product information. Although directed toward institutional food service managers, the Food Facts can lend in-depth support to managers in other food service endeavors, as well as distributor product managers, sales personnel and students of food service.

This manual is restricted mostly to items commonly served in institutional feeding programs, although some space is devoted to the broader aspects of food products.

The Food Facts are devoted principally to the high volume meat and grocery items used in food service operations. About 30 percent of the items, or around 100, account for about 80 percent of the dollars spent for meats and groceries.

How to Use

If, for example, you are looking for information on fresh pork sausage, find the Group Number in the Contents Summary. Then turn to the contents of that Group Number (III - 2) and find the specific item, fresh pork sausage (III - 5). Or, use the Index in the back of the manual.

Request

If you have or encounter any additional pertinent or interesting information on a product listed in this manual or a new item which you would like to see added, please mail it to the address in the FOREWORD and it will be included in the next edition of the manual. After all, these manuals are produced for your use.

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Foodservice Cuts of Beef



Got a question about beef?

Call or write the Foodservice Department
of the National Live Stock and Meat Board
444 North Michigan Avenue • Chicago, IL 60611
(312) 467-5520

This chart is part of a coordinated beef marketing effort by the Beef Industry Council of the Meat Board and your local beef industry

The preservation of beef by the use of salt is termed "corning". The word originates from the 16th century when the word "corn" was synonymous with the word "grain". At that time manufacturers of gunpowder used the word "corning" to indicate that the powder had been spread out and allowed to dry in single grains. Later the term "corned" was applied to the curing of beef by sprinkling it with grains of salt. The term "corned" is still used even though the process is much different from merely sprinkling meat with salt.

The customary brisket (from the breast of the animal) is usually quite fat, therefore, to offer a leaner product some processors prepare corned beef from the top round. Corned beef has a storage life of approximately 6 months if frozen and only 9-11 days if held at 32-35°F and 85-90% relative humidity.

Corned Beef Brisket

Fresh beef briskets are corned (or pickled) by injecting a brine (or pickle) solution into the briskets with a multi-needle stitch-pump machine. The pickle solution is similar to that used in hams and consists of water, salt, sugar, sodium nitrite and phosphate. Corn syrup and sodium erythorbate may also be used as may various spices such as garlic, allspice, laurel leaf, celery and onions. A gray-brown color results if the nitrite is omitted, otherwise the cured brisket is a bright red color. A brisket may be pumped to 120 percent of its green weight. If pumped over 120%, it must be labeled "imitation". After briskets have been "cured" in this manner, they are placed in a vat and submerged for a few days in a pickle solution.

Some briskets are cured by skipping the pumping operation, placing the fresh briskets in vats and covering with a pickle solution for a week or two, depending on the thickness of the brisket.

Corned beef briskets are normally vacuum packed and frozen after they are removed from a pickling solution and drained.

Corn beef briskets must conform to IMPS #601. They are available in two grades or "Selections": Selection 1 or Selection 2. If a brisket is Selection 1, it must be at least moderately thick-fleshed and moderately plump. A Selection 2 brisket can be slightly thin fleshed and slightly flat.

The cut surface of the lean muscle of a brisket must be at least moderately firm for both Selections, but for Selection 1, the meat must be fine textured while Selection 2 can be moderately coarse textured. Both Selections must be a uniform bright color.

The fat of Selection 1 brisket must be moderately firm and smooth while fat on a Selection 2 brisket can be slightly soft and oily.

Cuts and scores which interfere with the making of satisfactory slices is not acceptable with either Selection.

Corned beef briskets may be identified by three weight ranges: under 9 pounds, 9 to 12 pounds, and over 12 pounds.

Many people feel that Choice briskets have a great deal of excess fat thus, U.S. Good Grade is sometimes more expensive than U.S. Choice. Although corned beef briskets are available in U.S. Good or Choice Grades, it is suggested that specifications call for U.S. Good or higher.

Product Example: Eckrich Choice Brisket, Mild, #646

Pack Example: 3/6-11 pound. (25 pound. av. wt./case)

Price Unit: pound.

Purchase Unit: Case (Variable Weight)

Store for usage: Chilled

Corned Beef Top Round

Corn beef top round (IMPS #606) is a cured top (inside) beef round IMPS #168. A corned beef round is much leaner than a corned brisket. Although regulations permit a brisket to be pumped to 120%, other cuts including a round may be pumped to only 110 percent of its green weight. Corned top rounds are usually packed and frozen in vacuum sealed bags.

Although corned beef top rounds are available in U.S. Good or Choice grades, it is recommended that specifications require a U.S. Good or higher. The U.S. Choice top round does not have the excess fat that the brisket has, however, if a very lean product is desired, U.S. Good may be specified.

Product Example: Eckrich Corned Beef Round, Kosher style, #641

Pack Example: 2/6-11 pound. (19 pound. av. wt./case)

Price Unit: pound.

Purchase Unit: Case (Variable Weight)

Store for usage: Chilled

School districts purchase ground beef in several different styles: Conventional bulk ground beef similar to the product donated to schools by the USDA, bulk ground beef with VPP (vegetable protein product); conventional patties; patties with VPP; cooked patties (charcoal broiled or "chicken fried", i.e., breaded).

Beef, Ground, Bulk

Bulk ground beef must conform to IMPS #136. Accordingly it is prepared from beef and trimmings which are graded or ungraded except that batches of straight fat and organ meats must be excluded. This means the exclusion of meat from the head, tongue, heart, esophagus, etc.

Ground beef must contain a minimum of 70% lean meat, i.e., a maximum of 30% fat. The ratio of lean to fat is expressed as 70:30 or 80:20.

To conform to IMPS #136, ground beef must be prepared by making a double grind. The first or coarse grind is made through a plate with holes 3/4" in diameter. The second grind is made through a plate with holes 1/8" in diameter. A single grind may be specified for ground beef to be used in making chili, spaghetti sauce, meat loaf, sloppy joes, burritos, pizza, etc. Since there are no IMPS requirements for a single grind, a #136 can be specified with stipulation for a single grind only.

Bulk beef is packed in boxes lined with polyethelene or in poly- sleeves weighing 5 or 10 pounds each.

Federal Specifications:

PP-B-2120 Type I

Product Example: Colonial Beef #150205

Pack Example: 6/2/5 pound. (Case Wt. 60 pound.)

Price Unit: pound. Purchase Unit: Case (Fixed Weight)

Store for usage: Freezer (thaw in chilled)

Beef, Ground, Bulk with VPP (Vegetable Protein Product)

This is the same as bulk ground beef except that VPP is added. This product must conform to IMPS #136A. Under the new regulations, a maximum a 30 percent of hydrated VPP (18 percent protein by weight) is permitted.¹ The percentage of meat should be stated, for example, 80% beef with VPP or 75% beef with VPP. The product is packed in the same type wholesale units as bulk ground beef without VPP.

1. According to Food and Nutrition Service regulations effective February, 1985.

Beef, Patties

This product must conform to IMPS #1136. The patties are prepared from ground beef (IMPS #136) and are usually frozen individually in a nitrogen or air blast tunnel. Sizes must be specified, i.e., from 1.6 to 4 oz. each or the number of patties per pound i.e., 4, 5, 8 or 10. If the patty is to be served on a bun, the patty size (diameter) and shape must be specified to ensure that the patty and bun are compatible, i.e., round, oval or hoagie. Round patties are available in the following sizes: 3/16 x 4-3/4", 1/4 x 4-3/32", 5/16 x 3-23/32", 3/8 x 3-11/32", 1/2 x 3", 5/8 x 2-23/32" or 3/4 x 2-15/32".

<u>Wt.</u>	<u>No./lb.</u>	<u>No./10 lb.</u>	<u>Tolerances</u>
1.6	10	100	2
2.0	8	80	2
3.2	5	50	1
4.0	4	40	1

Frozen beef patties are either layer packed in boxes or stack-packed in sleeves with wax paper between each patty.

Federal Specifications: PP-B-2120 Type III

Product Example: Sysco #1508

Pack Example: 80/2 oz.

Price Unit: lb.

Purchase Unit: Case (Fixed Weight)

Store for usage: Freezer (cook frozen)

Beef Patties with VPP

This product must conform with IMPS #1136A. Beef patties with VPP are formed from bulk beef with VPP as previously described. Otherwise, they conform to the same parameters as regular beef patties.

Federal Specifications: PP-B-2120 Type III

Product Example: Beef with VPP(80% Beef)

Pack Example: 80/2 oz.

Price Unit: lb.

Purchase Unit: Case (Fixed Weight)

Store for usage: Freezer (cook frozen)

Charcoal Broiled Beef Patties with VPP

This product is the same as regular patties with VPP except that the patties are cooked. Cooking is done on a continuous tunnel broiler, gas flame fired with charcoal flavor added. After cooling, the patties are individually quick frozen and either stack-packed in a sleeve or layer packed in a box. Patties are available in sizes from 1.6 to 4 oz. The size stated refers to the cooked weight. Cooked beef patties can be purchased with either a CN (Child Nutrition) label (see discussion of CN at the end of this section) or a "certificate" from the packer. The certificate states specifically the contents of the product and many manufacturers certify that the product meets the meal pattern requirements.

Federal Specifications: PP-B-2120 Type III
Product Example: Zartic #85323
Pack Example: 80/2 oz.
Price Unit: lb.
Purchase Unit: Case (Fixed Weight)
Store for usage: Freezer (cook frozen)

Chicken Fried Beef Patties

This product is the same as beef patties (IMPS #1136) except the patties are breaded, battered and cooked in the same manner as breaded chicken. The product is available with a CN label or a packers certificate. Chicken fried beef patties are frozen and available in the same sizes as other beef patties.

Federal Specifications: PP-B-2120 Type III
Product Example: Zartic #95022
Pack Example: 80/2 oz.
Price Unit: lb.
Purchase Unit: Box (Fixed Weight)
Store for usage: Freezer (cook frozen)

Chuckwagon, Hoagie, and Pizza Beef Patties

These three types of patties are the same as beef patties. They may or may not contain VPP. However, they may be formed in different shapes and with special seasonings, for example, pizza patties may have a slice of mozzarella cheese. These types of patties are available 3, 4, or 5 to the pound and either layer-packed or sleeve-packed.

Federal Specifications: PP-B-2120 Type III
Product Example: Colonial Beef Hoagie Patties #143205
Pack Example: 4/30/5 oz. (4 boxes of 30-5 oz. patties per case)
Price Unit: lb.
Purchase Unit: Box
Store for usage: Freezer (cook frozen)

1. Certification by the manufacturer does not ensure that the USDA-FNS will uphold this certification.

Beef liver must conform to IMPS #701. Accordingly, beef livers are trimmed to eliminate ragged edges and remove the gall bladder. The heavy connective tissue, the large blood vessel and ducts lying along the liver wall are trimmed level with the surface.

The color of beef liver may range from light brown, with reddish shades predominating, to dark brown.

Selections may be No. 1 or No. 2. Selection No. 1 livers are compact, thick, short and plump, while No. 2 livers are moderately compact, thick, short and plump.

Both selections must be practically free of blemishes. Cuts and scores on No. 1 livers must not exceed 1 inch while those on No. 2 livers must not exceed 2 inches. Small sections of the No. 1 liver may be removed provided that their removal does not interfere with making satisfactory slices. Up to approximately 1/3 of the No. 2 liver may be removed unless the removals interfere with making satisfactory slices.

Portion-Cut Beef Liver

Portion-cut beef liver must conform to IMPS #703. Accordingly, the heavy connective tissue, the large blood vessel and the ducts lying along the liver wall are removed. The outer "skin" and the small lobe are also removed and excluded. The liver may be molded, frozen, tempered (but not thawed) and/or pressed before slicing. Broken slices are not acceptable.

Portion-cut beef liver is sliced approximately 5/8 inch thick. IMPS designates the number of portions in a box by a formula. For portions of 4 oz. or less, the formula is as follows: For a 10 pound unit (box), the number of slices per pound multiplied by 10 plus or minus 2, i.e., for a 4 oz. portion, there are 4 slices per pound multiplied by 10 ($4 \times 10 = 40$) plus or minus 2 ($40 + \text{or} - 2 = 38 \text{ to } 42$). For a 3 oz. portion, there are 5.3 slices per pound multiplied by 10 ($5.3 \times 10 = 53$) plus or minus 2 ($53 + \text{or} - 2 = 51 \text{ to } 55$).

For portion sizes 5 oz. or more, the formula is the same except that the pieces per box may not vary more than plus or minus 3, i.e., for a 6 oz., portion there are 2.6 slices per lb. multiplied by 10 ($2.6 \times 10 = 26$) plus or minus 3 = 23 to 29). Portion-cut liver is layer packed and frozen.

Product Example: Colonial Beef #168200

Pack Example: 24/4 oz.

Price Unit: Box

Purchase Unit: Box (fixed Weight)

Store for usage: Freezer (cook frozen)

Sliced Beef Liver

Sliced beef liver must conform to IMPS #702 and is the same as portion cut liver except the small pieces of skin may be left on the edges and in the crease of the small lobe (the lobe is not removed). Sliced liver is sliced from end to end. The liver may be reassembled in natural sequence or layer packed with plastic, parchment or waxed paper between layers. It is generally purchased frozen.

Product Example: Colonial Beef 165104

Pack Example: 10-lb. box

Price Unit: Box

Purchase Unit: Box

Store for usage: Freezer (cook frozen)

KNOW HOW TO CHOOSE

The shield-shaped marks you may find on cuts of fresh meat or on poultry packages help you choose the quality that fits your needs and your budget.



USDA grades for beef, veal, and lamb are a guide to the tenderness, juiciness, and flavor of the meat. USDA Choice is the grade most widely sold. Highest grade is USDA Prime. Lower grades include USDA Good, Standard, and Commercial. There are no consumer grades for pork.



USDA grades for poultry are guides to meatiness and appearance. Tenderness depends on the age of the poultry, indicated by words such as "young" or "broiler-fryer." USDA Grade A is the only grade you are likely to find on a poultry label. Lower grades are seldom indicated.

Schools may use several types of beef roasts. Beef roasts may be prepared from the top (inside) round, bottom round, rib (prime rib), ribeye, chuck or shoulder clod. Roasts may be purchased raw or cooked and in any USDA grade desired.

Top (inside) Round Beef Roast

This roast is prepared from the top (inside) round and must conform to IMPS #168. Sizes range from 14 to 23 pounds and up. The maximum thickness of exterior fat should be specified, for example, maximum of 1/2 inch exterior fat. This amount of fat will be enough to give maximum flavor but not be excessively wasteful. The cuts are packed in shrink film, several (2 to 4 depending upon weight) to a master carton. The buyer must specify the weight range and the grade desired.

Other roasts such as bottom round, rib, ribeye, etc. are prepared according to their IMPS number in a similar manner.

Federal Specifications: None known¹

Product Example: Swift #3478²

Price Unit: lb.

Purchase Unit: Each, variable weight

Store for usage: Chilled (for thawing if received frozen)

Cooked Beef Roast

The specifications for cooked beef roast are for all practical purposes the same as for the raw cut. Fresh or frozen beef of any grade as well as frozen boxed imported beef are used in preparing this product.

Before cooking, fresh or thawed frozen roasts are trimmed and often tenderized either by puncturing with needles or injecting with a tenderizing solution. The roasts are rubbed with a dry seasoning, usually consisting of salt, sugar, caramel and MSG (Monosodium Glutamate), to give a good color, then placed in bags and vacuum sealed.

Roasts are cooked in either moist or dry heat. Moist cooked roasts are heated in water cook tanks or in ovens in high humidity or steam. After cooking, the juice may be drained, the roasts repackaged (vacuum packed) and sold as a dry pack; or the roasts may be sold as is with the juices remaining in the bag. Food service establishments which serve the items as a plated entree prefer the juice pack, whereas sandwich shops prefer the dry pack. The drained dry product sells for more than the wet pack because the processor must make up for the loss in juices.

1. There are military specs for Beef, Market-Ready Cuts but these are not specific to a top (inside) beef round.

2. Not a true code number.

Dry cooked roasts are heated in a dry heat, usually an oven. This type of roast can be called "oven roast beef" or "roasted beef" but it must be cooked without a bag or in a perforated bag. These roasts are usually more expensive than water or steam cooked roast because of the extra expense involved and the loss of weight in cooking.

Both dry and wet cooked beef roast are cooked to various degrees of doneness: rare, 140°F; medium-rare, 150°F; medium, 160°F; medium-well, 165°F; and well, 170°F. These temperatures are relative and may vary from processor to processor. Federal regulations state the time and temperatures that meat must be cooked to ensure the wholesomeness of the product. After cooking, the product is chilled to below 40°F as rapidly as possible to prevent over cooking and to reduce bacterial action. Most roasts are frozen immediately after cooking and cooling.

If roasts are to be heated before serving, rare or medium-rare might be ordered to allow the roasts to cook slightly before serving, but if a roast is to be served cold, a selection of medium or medium-well might be the best choice.

Cooked weights range from 10 to 20 pounds. Some processors have been relatively successful in producing restructured roasts in fixed weights but this is not the norm. Some packers split the rounds before cooking. This yields a cut with a wide side which may provide larger and more uniform slices.

Roasts are packed in shrink film, two or more to a master carton depending on the individual weights.

Product Example: Eckrich #06390

Pack Example: 2/29 lb. average

Price Unit: lb.

Purchase Unit: Each (variable weight)

Store for usage: Chilled (for thawing if received frozen)

- Refer to the chart below as a guide to doneness.

INTERNAL TEMPERATURE WHEN DONE	
	° F.
FRESH BEEF	
Rare.....	140
Medium.....	160
Well Done.....	170
FRESH VEAL.....	170
FRESH LAMB	
Medium.....	170
Well Done.....	180
FRESH PORK.....	170
CURED PORK (Cook-Before-Eating)	
Ham.....	160
Shoulder.....	170
Canadian Bacon.....	160
CURED PORK (Fully Cooked)	
Ham.....	140

Animal and Plant Health Inspection Service
U.S. Department of Agriculture
Slightly revised May 1973

Stew Meat

This product must conform to IMPS #135A. The meat is prepared by either hand-dicing or processing through a dicing machine. At least 75 percent of the resulting pieces shall not be less than a 3/4 inch cube and not more than 1-1/2 inch cube with no individual pieces exceeding 2-1/2 inches in length. The surface fat may not exceed 1/4 inch in thickness at any one point and the fat content of the boneless meat cannot exceed 20 percent as determined visually. Graders rely on their experience and knowledge of meat being used to determine the fat content. Stew meat is usually packed in 10-lb. boxes, lined with poly-film.

Product Example: Colonial Beef #158105

Pack Example: 4/2/5-lb. (2-5-lb. pkg. per box, 4 boxes per case = 40 lb.)

Price Unit: lb.

Purchase Unit: Case

Store for usage: Freezer (cook frozen)

Beef Sticks

This product is known by other names such as slim sticks or finger patties. The product is prepared in a variety of ways - all solid meat, cubed; all meat, chopped and formed; beef and chicken meat, chopped and formed; and ground beef with VPP. It is prepared from lean beef, lightly breaded with enriched flour (approximately 25 percent) and cooked to a golden brown. Beef sticks may be purchased with a CN label or with a certificate from the packer.

Product Example: Zartic #95300

Pack Example: 160/1 oz. (10 lb.)

Price Unit: lb.

Purchase Unit: Box (Fixed Weight)

Store for usage: Freezer (cook frozen)

Federal Inspection Mark for Red Meat

Red Meat

Here are the marks of Federal inspection—



This is the stamp put on meat carcasses. It is only stamped on the major cuts of the carcass, so it may not appear on the roast or steak you buy.



You will find this mark on every prepackaged processed meat product—soups to spreads—that has been Federally inspected.



This is the mark used on Federally inspected fresh or frozen poultry or processed poultry products.

As previously discussed, some meats can be "extended" by substituting vegetable protein. Although the amounts which can be substituted (and still call the meat products by name, i.e. hamburger patties) are clearly defined in the appropriate Institutional Meat Specifications (IMPS) as presented herein (Group XII) - and as may otherwise be required by labeling regulations.

At one time vegetable protein products (VPP) were commonly referred to as TVP (textured vegetable protein), which is a trademark of the ADM Company (Archer Daniels Midland).

Perhaps the most comprehensive information available on the use of VPP has been developed by the USDA's Food and Nutrition Service (FNS) and the Soy Protein Council. Since the nutritional component of VPP is of concern to FNS the following pertinent information was developed principally for use in school and institutional food service.

Introduction

Vegetable protein products (VPP) have been authorized through FNS Notice 219 since 1971 as an alternate food to meet part of the meat/meat alternate requirement of the meal patterns for the child nutrition programs. This notice established specific requirements and guidelines for the use of VPP based on the technology available at that time. The use of VPP to meet FNS Notice 219 was limited mainly to textured soy flours with 50 percent protein and allowed for a maximum moisture content for hydrated VPP of 65 percent.

Developments in food technology since that time have created new types of VPP which schools can now use in addition to products which have been used in the past. These products include isolates² and concentrates. Recognition of these technological advances allows for greater flexibility in food formulation by offering school foodservice operators the option of using improved vegetable protein ingredients which result in menu flexibility and increased value for their food purchase dollars.

What is VPP? (Substitute Food)

A VPP is a food which may be used to resemble and substitute, in part, for meat, poultry or seafood. A VPP used in this manner may contain flours, concentrates or isolates, or any combination of these as ingredients along with added nutrients, colors, flavors, etc.

^{1/} Courtesy of the USDA-FNS Nutritional Technical Service Division, (703 756-3556) and the Soy Protein Council, (202) 467-6610.

^{2/} Uncombined or pure substance.

How do the New Regulations Compare to FNS Notice 219?

FNS Notice 219 (obsolete)	New Regulations
Mainly limited to textured soy flours	Allows proper use of flours, concentrates or isolates
Used in combination with and substitutes for ground or diced meat, poultry, seafood	Used in combination with and substitutes for meat, poultry, seafood
Must be textured	No texture requirement
Hydration - 1 Part VPP: 1.5 parts water (liquid)	Hydration - vegetable protein (fully hydrated or equivalent) to be 18% protein by weight
Dry VPP and water (liquid) actually used (to maximum allowed) credited toward meal pattern requirements	Dry, partially hydrated, fully hydrated VPP credited on equal basis
30 percent maximum level of substitution for credit	30 percent maximum level of substitution for credit
Contribution of VPP based on yield of meat, poultry, seafood it is combined with	Contribution VPP based on yield of meat, poultry, seafood it is combined with
Established nutrient profile	Establishes more current nutrient profile
FNS reviews products and maintains list	Naming and labeling requirements/recommendations established - list eliminated

Can I use FNS Notice 219 and the new regulations interchangeably?

NO. Schools using VPP which meet FNS Notice 219 must use these products in accordance with FNS Notice 219. Likewise, VPP which meet the new regulations must be used according to these regulations.

I understand that the "texture" requirement for VPP has been eliminated. Why?

The intent of this requirement was to ensure that a hydrated product resembled the physical characteristics of the meat, poultry or seafood it replaced. Recent advances in the technology of VPP make it unnecessary to impose such a requirement. Other methods are, and may be, used to produce structure where appropriate.

How is VPP used as an alternate food in the school lunch program?

- Vegetable protein products must be prepared in combination with meat, poultry or seafood.
- A fully hydrated vegetable protein product may not exceed 30 parts to 70 parts uncooked meat, poultry or seafood.
- Vegetable protein products may be used in the dry, partially hydrated or fully hydrated form in combination with meat, poultry or seafood.
- Vegetable protein products must resemble and substitute for meat, poultry or seafood. Substitute refers to a VPP whose presence in another food results in a smaller amount of meat, poultry or seafood. It does not refer to a VPP used to substitute for a starch. The VPP may resemble the meat, poultry or seafood at any point of preparation. If the VPP in the finished food looks like, tastes like, etc., the meat, poultry or seafood with which it is combined, the resemblance criterion is met.

What food products provide the best opportunities for using VPP as an alternate food?

Examples of product in which a VPP can be used as an alternate food include, but are not limited to, beef patties, chicken patties, pizza toppings, chili, meat loaf, tuna salad, and taco fillings.

When can VPP not be used as an alternate food for credit?

Vegetable protein products cannot be used as an alternate food when substituting for a starch, as in foods such as pizza crust or as a breading on a meat, poultry or seafood product. Also, VPP cannot be used as an alternate food when used as functional ingredients such as binders in products (i.e., binders in meat products) and thickening agents in sauces. However, this does not prevent the use of VPP in the products, such as pizza crusts, in the child nutrition programs.

When VPP is used in the national school lunch program is it subject to nutritional labeling regulations of the Food and Drug Administration?

NO. Food products used in the National School Lunch Program are exempt from nutritional labeling by virtue of the fact that they are supplied for institutional food service only. However, manufacturers are required to provide the nutrition information to school foodservice personnel in literature or technical brochures on a current basis.

Will the new regulations affect the amount of meat, poultry, and seafood used in the national school lunch program?

NO. The regulations maintain a 30 percent maximum level of substitution of hydrated vegetable protein product for meat, poultry or seafood on an uncooked basis. Therefore, the minimum percentage of meat, poultry or seafood to be used with the hydrated vegetable protein product remains at 70 percent regardless of the type of vegetable protein product used.

Why do the regulations eliminate the need for FNS to analyze specific VPP and maintain listings of acceptable products?

Due to the labeling requirements for VPP, the need to continue the monitoring of these products by FNS through an approval list is eliminated. It is expected that manufacturers will provide information on the percent protein in a VPP and/or how to use and hydrate VPP mixes.

Does FNS require that VPP be fortified with essential nutrients?

YES. The nutrient profile for vegetable protein products is more current and comprehensive than the nutrient fortification levels specified in FNS Notice 219. Vegetable protein products must contain the following levels of nutrients per gram of protein:

Nutrient	Amount
Vitamin A (IU)	13
Thiamine (milligrams)	.02
Riboflavin (milligrams)	.01
Niacin (milligrams)	.3
Pantothenic acid (milligrams)	.04
Vitamin B ₆ (milligrams)	.02
Vitamin B ₁₂ (micrograms)	.1
Iron (milligrams)	.15
Magnesium (milligrams)	1.15
Zinc (milligrams)	.5
Copper (micrograms)	24
Potassium (milligrams)	17

NOTE: Certain ingredients may not be reflected in the source ingredient statement since the naturally occurring nutrients inherent in the VPP may be sufficient to meet the above requirements.

The biological quality of the protein in the VPP must be at least 30 percent that of casein, determined by performing a Protein Efficiency Ratio assay or unless FNS grants an exception by approving an alternate test.

How do you determine the hydration levels for VPP?

The regulations provide for the appropriate hydration for VPP by setting the protein quantity requirements for a product when fully hydrated at 18 percent by weight. The various VPP will require different amounts of water (or other liquid) for full

hydration. It is expected that manufacturers will provide information on the percent protein in the VPP as purchased or adequate instructions so that the VPP can be properly hydrated. With this information, the following steps may be used to determine the hydration of any VPP for full credit.

1. Determine the ratio of VPP to water or other liquid (allowed for full hydration) using the following formula:

$$\frac{\% \text{ protein in VPP as purchased}}{18\% \text{ minimum protein}} = \text{total parts hydrated product}$$

2. Total parts hydrated product minus 1 part VPP = parts water or other liquid for full hydration.

The following examples illustrate the amounts of dry VPP and liquid to use to replace each pound of raw meat in a recipe. The percent protein in each type of VPP is representative only. The ratio of dry VPP to liquid may vary depending upon the protein content of the product you are actually purchasing.

**Vegetable Protein Product-Flour
(50 percent protein)**

Hydrated VPP	Raw meat	Dry VPP	Liquid	Total product
substitution percent	pound	pound	pound	pound
30	0.70	0.11	0.19	1.00
25	.75	.10	.15	1.00
20	.80	.08	.12	1.00
15	.85	.06	.09	1.00
10	.90	.04	.06	1.00

**Vegetable Protein Product
Concentrate
(65 percent protein)**

Hydrated VPP	Raw meat	Dry VPP	Liquid	Total product
substitution percent	pound	pound	pound	pound
30	0.70	0.09	0.21	1.00
25	.75	.07	.18	1.00
20	.80	.06	.14	1.00
15	.85	.05	.10	1.00
10	.90	.03	.07	1.00

**Vegetable Protein Product-Isolate
(85 percent protein)**

Hydrated VPP	Raw meat	Dry VPP	Liquid	Total product
substitution percent	pound	pound	pound	pound
30	0.70	0.07	0.23	1.00
25	.75	.06	.19	1.00
20	.80	.05	.15	1.00
15	.85	.04	.11	1.00
10	.90	.03	.07	1.00

How do I determine the contribution that VPP makes toward the meal pattern requirements ?

The contribution that VPP used in the dry or partially hydrated form makes toward the meat/meat alternate requirement is calculated based on the quantity by weight of VPP plus the amount of water or other liquid that would have been used to attain full hydration.

When computing the preparation yield of a product containing meat, poultry or seafood, and VPP, the VPP is evaluated as having the same preparation yield that is applied to the meat, poultry, or seafood it replaces.

The following examples of raw beef patties made with concentrate illustrate how VPP is credited:

Formula: 30% level of replacement with concentrate.

Ground Beef (no more than 30% fat.)

NOTE: The following formulations are for illustrative purposes ONLY.

	Pattie #1 (Fully Hydrated)	Pattie #2 (Partially Hydrated)
Ground Beef	2.10 oz.	2.10 oz.
Concentrate	0.26 oz.	0.26 oz.
Water (Liquid)	0.64 oz.	0.34 oz.
Portion Size	3.00 oz.	2.70 oz.

Both of these raw beef patties will provide the same contribution toward the meal pattern requirements. The contribution of the beef patty made with partially hydrated VPP should be calculated as if the VPP were fully hydrated as follows:

$$2.10 \text{ divided by } .26 + .64 = 3.00 \text{ oz.}$$

$$3.00 \times .70 = 2.10 \text{ oz. equivalent meat/meat alternate.}$$

FOOD FACTS

I - VEGETABLE PROTEIN PRODUCTS (VPP)

**Cooking yield as stated in the Food Buying Guide for School Food Service, 1980: Ground Beef (no more than 30% fat) - 70% yield.)*

What are VPP mixes? How are they credited?

Vegetable protein product mixes are dry products containing VPP along with substantial levels (more than 5 percent) of seasonings, bread crumbs, flavorings, etc. For example, a mix may contain 80 percent dry VPP and 20 percent seasonings. Only the VPP portion of the mix may be credited as a meat alternate in the child nutrition programs. The regulations recommend that manufacturers provide information on the amount by weight of dry VPP in the package and instructions on how to use and hydrate the VPP mix.

How do you credit VPP mixes?

Example:

MEATLOAF MIX WITH VPP - 65% VPP (53% Protein)
35% Bread Crumbs
Seasonings

Total amount of mix used is 4 lbs.

Step 1. Determine the amount of creditable VPP: $4 \text{ lbs.} \times .65 = 2.6 \text{ lbs. VPP}$

Step 2. Determine the hydration for credit:

.53 Percent Protein = 2.9 parts total hydrated product
18 percent

2.9 parts - 1 part VPP = 1.9 parts liquid for hydration

Step 3. Determine the total amount of liquid allowed for hydration.

$2.6 \text{ lbs. VPP} \times 1.9 = 4.94 \text{ lbs.}$

NOTE: 4.94 lbs. of liquid used with 4 lbs. of VPP mix will provide full hydration of the VPP.

Step 4. Determine the lbs. of hydrated VPP that can be credited toward the meal requirements.

$2.60 \text{ lbs. VPP} + 4.94 \text{ lbs. liquid} = 7.54 \text{ lbs. hydrated VPP.}$

FOOD FACTS

I - CN LABELING PROGRAM¹

Background

- The meal pattern requirements for the child nutrition (CN) programs (National School Lunch Program, School Breakfast Program, Child Care Food Program, Summer Food Service Program for Children) specify that institutions participating in these programs must serve specific amounts of food from each of four food components.
- These four food components are as follows: meat/meat alternate, vegetable/fruit, bread/bread alternate, and milk. To ensure that meals served in

¹ Courtesy of the USDA-FNS, Nutritional Technical Service Division, (703) 756-3556.

the child nutrition programs meet these meal pattern requirements, it is necessary to determine the contribution that individual foods make toward these requirements.

- During the 1970's, advances in food technology and marketing increased the availability and use of commercially prepared products such as beef patties and combination items (burritos, pizzas, etc.) in the child nutrition programs. These products posed a problem for food service directors. It was difficult at the point of sale to determine their actual contribution toward meal pattern requirements and to assure compliance with Federal regulations for serving specific amounts of foods. This fact, coupled with the anticipation of increased sales of these products to child nutrition programs, prompted FNS to form an evaluation committee to determine a means for properly evaluating the contribution of these kinds of products toward the meal pattern requirements.
- The committee, composed of FNS and FSIS¹ staff, worked together to establish and implement a program to review and monitor such products. This program became known as the CN Labeling Program. The program is administered by FNS in cooperation with FSIS and the Agricultural Marketing Service (AMS) of USDA, and the National Marine Fisheries Service of the U.S. Department of Commerce (USDC).
- From the beginning of the CN Labeling Program, the labeling procedures evolved on a case-by-case basis to meet new situations. For several years, FNS administered the program without formal regulations. Then on May 1, 1984, final regulations were published in the Federal Register with an effective date of July 2, 1984.

Eligibility Criteria for a Product with a CN Label

Meat/meat alternate products eligible for CN labels include:²

- Commercially prepared food products that contribute significantly (a minimum of 0/50 oz. equivalent meat/meat alternate) toward the meat/meat alternate component of the meal pattern requirements. The meat/meat alternate component includes: red meat, poultry, seafood, cheese, eggs, dry beans or peas, peanut butter, vegetable protein products, cheese alternates, and enriched macaroni with fortified protein. Meat/meat alternate products may also contribute to the bread/bread alternate and/or vegetable/fruit component of the meal pattern requirements.

To carry CN labels meat/meat alternate products must:

- Be produced under Federal inspection by USDA or USDC. This inspection must be performed according to an approved partial QC program or standards established by the appropriate inspection program.
- Have their contribution toward meal pattern requirements determined using the Food Buying Guide for Child Nutrition Programs (Program Aid 1331). The Food Buying Guide gives average yield information on over 600 food items. The data in this guide are based on laboratory testing by the Human Nutrition Information Service, USDA.

¹ Food Safety Inspection Service

² A few examples of food products with CN-labeling are given in the manual. There are undoubtedly many others that are not included since a list of CN-labeled products was not available.

Yields for meat and poultry products were determined using conventional cooking methods and on the raw to cooked weight of the meat or poultry without bone and any added binders, extenders or other ingredients. Using yields from the Food Buying Guide will help ensure that various meat/meat alternate items, regardless of cooking methods used or the addition of other ingredients, will be nutritionally equivalent.

A copy of the Food Buying Guide is on file in each MPI¹ regional office.

Examples of meat/meat alternate products that may be CN-labeled include: beef patties, cheese or meat pizzas, meat or cheese and bean burritos, egg rolls, pork or beef bar-b-que, meat or cheese pasta products, pot pies, and bulk pizza toppings.

How to Identify a CN Label

A CN label must have the following information printed on the principal display panel of the label:

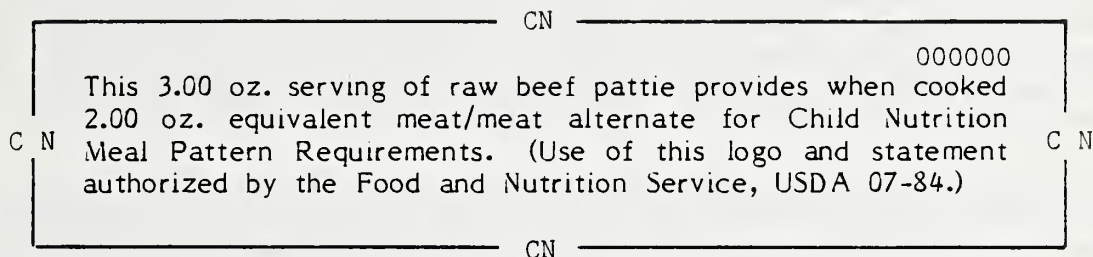
- CN label statement
- Product name
- Ingredient listing in descending order of predominance by weight for all ingredients
- Establishment number (meat, poultry, and seafood items only)
- Manufacturer's or distributor's name and address
- Inspection legend for the appropriate inspection program

The CN label statement must be an integral part of the product label and must include the following information:

1. The CN logo which is a distinct border around the CN label statement.
2. A six-digit product identification number assigned by FNS which will appear in the upper right-hand corner of the CN label statement. (FNS will assign a new identification number each time a final label application is received).
3. The statement of the product's contribution toward meal pattern requirements for the child nutrition programs. This identifies the contribution of a specific portion of a meat/meat alternate product toward the meat/meat alternate component of the meal pattern requirements, and, if any, its contribution toward the bread/bread alternate, and/or vegetable/fruit component.
4. A statement specifying that the use of the logo and CN label statement is authorized by FNS.
5. The month and year that FNS approved the label in final form.

The sample printed below shows the general location for each component of the CN label statement.

¹Meat Products Inspection



CN Label Warranty

All CN-labeled products that are Federally approved and have a CN logo carry a warranty. If a food service authority participating in the child nutrition programs purchases such a product and uses it according to the directions, the institution will not have an audit claim filed against it, for that CN labeled product, for noncompliance with the meal pattern requirements.

If a State or Federal auditor finds that a CN-labeled product does not actually meet meal pattern requirements claimed on the label, the auditor will report this finding to the FNS national office. FNS will prepare a report on the findings and send it to the appropriate division of FSIS, AMS, USDC, Food and Drug Administration (FDA), or the Department of Justice for action against the company. That office will then be responsible for auditing production records to determine whether the product, as produced, met the conditions of the CN label statement before it left the plant. If the audit shows that the product, as produced, does not meet the label statement, any or all of the following actions may be taken:

- The company's CN label may be revoked for a specific period of time;
- The appropriate agency may pursue a misbranding or mislabeling action against the company producing the product;
- The company's name will be circulated to FNS regional offices; or
- FNS will require the food service program involved to notify the State office of the labeling violation.

Basis for Crediting Meat/Meat Alternate Products

To understand the specific review procedures used by FNS for CN labels we first need to examine the basis for crediting meat/meat alternate products used in the child nutrition programs..

Meat/meat alternate products used in the child nutrition programs are credited on the raw basis using the appropriate cooking yields listed in the Food Buying Guide. This is done to provide equity in crediting different types of products regardless of the cooking methods used or the addition of binders or extenders. This in turn provides for comparable nutritional value (e.g., protein content) of a product when it is cooked by several different methods.

For example, suppose ground beef patties weighing 3 ounces are cooked three different ways: (a) Pan fried, (b) oven broiled, and (c) grilled. Their cooked weights are 2.00 ounces, 2.25 ounces, and 2.20 ounces, respectively. If these patties were to be credited according to their cooked weights, patty (b) would receive more credit than patty (a) or (c) even though all the patties were prepared with exactly the same amount of meat. The variation in cooked weights is due to differences in fat and water losses with only a minimal loss of nutrients.

Let's take this example one step further. Assume that 3-ounce beef patties are cooked by the same methods described above, but these contain 28 percent hydrated soy protein flour. The presence of the soy protein flour will decrease the amount of fat and water lost during cooking; therefore, the cooked weights of the beef-soy patties will be greater than the cooked weights of the all-beef patties. The nutritional value of the beef-soy patties, as served, is not greater. Their higher weights reflect an increased retention of fat and water only.

How to calculate the actual credit that these various patties and other meat/meat alternate products receive depends not on their cooked weight but on their raw weight, percentage of meat/meat alternate used, and appropriate cooking yield from the Food Buying Guide for Child Nutrition Programs (Program Aid 1331).

In order to provide equity in crediting meat/meat alternate products, regardless of cooking methods, FNS credits meat/meat alternate products on the raw basis and uses the term "equivalent meat" for crediting.

FNS Approval of CN Labels

All sketch and final CN labels must be reviewed and approved at the national level by FNS for compliance with CN Labeling Program requirements. FNS then forwards CN labels for meat and poultry products to FSIS and CN labels for nonmeat products to AMS. These agencies review the labels for compliance with other Federal labeling requirements and give final approval.

CN Label Application Materials

To obtain CN labels manufacturers are required to submit the following information to FNS, as applicable:

- FSIS MP Form 8822-1 including:
 - Percentage or weight of all ingredients in the form they are used in the product formulation
 - Maximum fat content of each meat used for which a fat content is specified in the Food Buying Guide.
 - Raw weight of an individual portion which must be specified for both raw and precooked preportioned products.

- The actual cooking yield for a total product, component of a product or ingredient that is precooked - this should be based on cooking tests performed in the manufacturer's plant. For combination items that are precooked this should reflect the maximum cooking yield for the product including meat, spices, water, etc. The cooking yield must also be stated for individual ingredients (meat/meat alternate and vegetable/fruit) that are precooked by the manufacturer before they are used in the product formulation.
- Fill specifications per serving when a product consists of two or more major components (e.g., pizza).
- Labels for prepared ingredients (e.g., cooked pizza topping) purchased from another manufacturer that contribute to the meat/meat alternate component of the meal pattern requirements. Must include a prior approved CN label for these ingredients.
- Information on alternate food products (vegetable protein products (VPP), cheese alternate products and enriched macaroni with fortified protein) used in the product. Must include a copy of the alternate food product label and for VPP a letter from the VPP manufacturer verifying the percent protein in the VPP. Additionally, the manufacturer's name, product name, and code for each alternate food used must be on each copy of the label application.
- Product Label - including the CN label statement.

FNS Review of CN Label Application Materials

FNS uses the above information to determine the product's contribution toward meal pattern requirements and to check the accuracy of the CN label statement. Critical factors reviewed by FNS on the label application are listed below.

Formulation and Ingredient Checks

- Meat/Meat Alternate Used - All meat/meat alternates listed in the product formulation are checked to see if they match food items listed in the Food Buying Guide. For example, ground beef (no more than 30% fat) is listed in the Food Buying Guide but beef (50/50 trimmings) is not listed. Only those food items listed in the Food Buying Guide can be credited toward meal pattern requirements.
- Percent Fat in Meat - This is checked for meat items used for which fat levels are specified in the Food Buying Guide, (e.g., "ground pork (no more than 24% fat).") Meat items which have higher fat levels than those listed in the Food Buying Guide will not be credited toward meal pattern requirements.

- Alternate Food Products - VPP, cheese alternate products, and enriched macaroni with fortified protein, when made and used according to USDA regulations, may be used to meet part of the meat/meat alternate component of the meal pattern requirements. If any of these products are used, FNS checks information supplied with the label application to determine if the product(s) meet FNS requirements and are used properly.
- Labels for Prepared Ingredients - Some products are formulated using meat/meat alternate components that are made by another manufacturer (e.g., cooked pizza topping) and that will be credited toward the meal pattern requirements. FNS checks to see if these products have a prior approved CN label. The information provided on the CN label statement for the prepared ingredient will be used in determining the contribution toward meal pattern requirements of the product it is used in.
- Bread/Bread Alternate Component - For meat/meat alternate products that contain a bread/bread alternate component, FNS checks the ingredient listing for the bread/bread alternate to determine if enriched or whole-grain flour or meal is the primary ingredient by weight.
- Vegetable/Fruit Component - For meat/meat alternate products that contain a vegetable/fruit component, FNS checks the vegetable/fruit ingredient used in the product. Vegetable/fruit items must be accurately described and must match a food item in the Food Buying Guide, e.g., carrots, canned, diced, drained.
- Manufacturer's Actual Cooking Yield for Precooked Ingredients - Some meat/meat alternate and vegetable/fruit ingredients are precooked by the manufacturer before they are used in the product's formulation. For example, ground beef used in egg rolls or lasagna may be cooked before the product is formulated. In this case, FNS checks the manufacturer's maximum yield of the raw to cooked meat and uses the weight of the raw meat in determining the product's contribution toward meal pattern requirements. Vegetables such as raw cabbage or carrots may also be cooked before they are put into such products as egg rolls.

Component and Portion Checks

- Fill Specifications - These are checked for products such as pizzas, burritos, and breaded patties that consist of two or more components. For example, a pizza would be specified as follows:

<u>Component</u>	<u>Weight (ounces)</u>
Crust (bread alternate component)	1.90
Cheese (meat/meat alternate component)	1.22
Cooked Meat Topping (meat/meat alternate component)	1.20
Tomato Sauce (vegetable component)	1.18
	<u>5.50 oz. portion</u>

As applicable, each component or portion of the product would be checked against the criteria outlined below.

- Cooked Weight of an Individual Portion - This is checked for precooked products and compared with the portion size stated on the CN label statement. It is also checked for precooked components of products against information on the label application.
- Raw Weight of an Individual Portion - This is checked for both raw and precooked products and, where applicable, components of a product. The raw portion weight is used in determining the product's contribution toward meal pattern requirements. Additionally, for precooked products the raw portion weight is compared to the weight of the cooked portion to determine if the actual cooking yield is reasonable for the type of product being made.
- Manufacturer's Actual Cooking Yield for the Total Product or Component of a Product - This is used to determine what a raw portion would weigh for combination items such as chili, cooked pizza topping, and filling for burritos that are used in bulk form or portioned on the cooked basis only. For example, if 3.5 oz. of cooked filling is used on a burrito and the manufacturer's actual cooking yield for the filling is a maximum of 89% the following calculation would be used to determine what a raw portion would weigh.

$$\begin{array}{ccc} 3.5 \text{ oz. cooked} & \text{divided by} & .89 \text{ actual cooking} \\ & \text{filling} & \text{yield} \end{array} = 3.93 \text{ raw portion}$$

An example of a completed CN label application for Beef, Bean and Vegetable Protein Product Burrito and the step by step procedure used by FNS in determining the product's contribution toward meal pattern requirements is contained in supplementary information I.

"Commodity Credit" is a term used exclusively in school food service and other nutrition programs and refers to the use of free commodities (such as cheese) in manufactured products. The term refers to the refunds or discounts received through "Commodity Processing Contracts".

A Processing Contract is an arrangement whereby Federal or State agencies can enter into contracts with commercial manufacturers for them to receive USDA donated foods (commodities), process them into "manufactured" foods such as mayonnaise, cheese pizza and hamburger buns and credit school districts with the value of the donated food.

Basically, processing contracts permit a school district to receive an end product containing a commodity at a price which is reduced by the predetermined value of the free commodity. This concept is referred to as passing through the value of USDA donated foods. The process of passing through the value is accomplished either by a refund or a discount procedure.

National Processing Contracts (NPC) administered by the Federal government are restricted to certain bonus items, i.e., cheese, butter, nonfat dry milk, rice and honey. State administered contracts are much less restrictive. For example, in national processing contracts for pizza only cheese may be used for credit, whereas in state-administered contracts other commodities such as tomato sauce, oil, flour and meat toppings might be used for credit on pizza.

Under a refund system, a processor makes a product and sells it to commercial distributors who in turn, sell the product to a school district at a competitive market price without regard to the donated food content. A school district can then invoice a manufacturer directly for a refund of the designated amount of the commodity credit, based on proof of purchase. However, as a substitute for this procedure, some distributors provide an instant rebate (refund) to school districts, then proceed to collect from the packer. This method is not highly favored by distributors because they must furnish proof of sale to the manufacturer, thus revealing confidential selling prices and incurring added paperwork. The refund method has a reasonable degree of accountability and maintains a normal level of competitiveness among commercial distributors.

Under the discount plan the most accepted procedure is for the packer to maintain title to the product and make the sale directly to the school district. The invoice from the packer is discounted by the amount of the commodity credit(s). Although the product may be sold and invoiced directly to a school district by a packer, a local distributor may deliver the product for a fee paid to him by the packer. State officials verify to school districts the entitlement amounts of the discounts.

In either instance (refund or discount) processors are accountable for their inventories and pass-through usage of donated food. Government agencies are therefore encumbered to track shipments to processors, usage, inventories and actual sales.

Food Packages (cans and cartons) have a code marked on the container. Initially the code was intended to enable a trace to be put on a product in the event of questionable performance. A code J5W27 might mean:

J = October

5 = 1985

W = Wasan, Wisconsin Plant

27 = 27th day of October

If a number, e.g. 137, is added this might mean lot no. 137 which also designates the product in the container.

The only way a buyer can decipher codes is to possess code explanations for each manufacturer. However, it is only necessary to interpret a code in the event a question arises concerning the validity of a product. In recent years packers have

been adding more information to cans and cartons relating to "shelf life." For example packers are required to place "sell by" dates on milk cartons. This simply means that if held at recommended temperatures the milk should be sold by the date indicated to allow enough time to conveniently utilize the milk.

Some packers voluntarily put "use by" or "Best if used by" dates on their cans and cartons. For example a can of pork & beans packed in February, 1985 might state "Best if used by December, 1987." Since food service managers have rapid turnover of products coming into their kitchens, complications are avoided provided that perishable products are held at proper temperatures, and used in the prescribed time, particularly highly perishable items, which have a short shelf life.

If purchases of frozen and staple items are made from a high volume distributor the chances are excellent that he also has a high rate of turnover, particularly on popular items, and practices FIFO stock rotation, i.e. FIRST IN, FIRST OUT.

However, it is a good practice for kitchen employees to check the coding on packages as they are opened to ascertain if the use of a product is within the confines of the "USE BY" dates. If not, and if this out of date situation appears on other samples, it may mean that a supplier is using you to unload old products. This is grounds for an immediate complaint.

If any products cause a problem of concern your distributor should be contacted at once. You must, however, provide him with the brand and code designations on the cans or cartons. Although master cartons (cases) carry product codes they do not normally carry date and source code information.

Raw or Cooked

Meats, poultry and seafoods are deemed to be raw (uncooked) unless the term "cooked" is used. The term "cooked" implies "fully" cooked unless a lesser degree of doneness is specified. Sometimes the term "raw" is used superfluously to accentuate the point.

IQF

The term "IQF" or Individually Quick Frozen" essentially means that the parts can be removed individually from packages. The term "quick" means frozen "at the time" in a freezer tunnel, either by air blast, nitrogen or carbon dioxide.

GROUP II - PORK PRODUCTS

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Foodservice Cuts of Pork



Blade (Butt) Roast
Boneless 406A*



Center Cut Chops
Boneless 1412B*



Center Cut
Loin 412*



Center Cut
Chops 1412*



Leg (Fresh Ham)
Boneless 402B*



Filets 1400*



Country Style
Ribs 423*



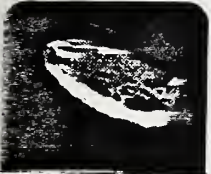
Back Ribs 422*



Tenderloin 415*



Canned Ham
Pullman Style



Blade Steak 1406*



Diced Pork 435



Canadian Style
Bacon 550*



Spareribs 416*



Smoked Ham, Skinless
Boneless 505*



Smoked Shoulder
Roll 530*



Smoked Picnic 526*



Top Loin Roast
Boneless 413A*

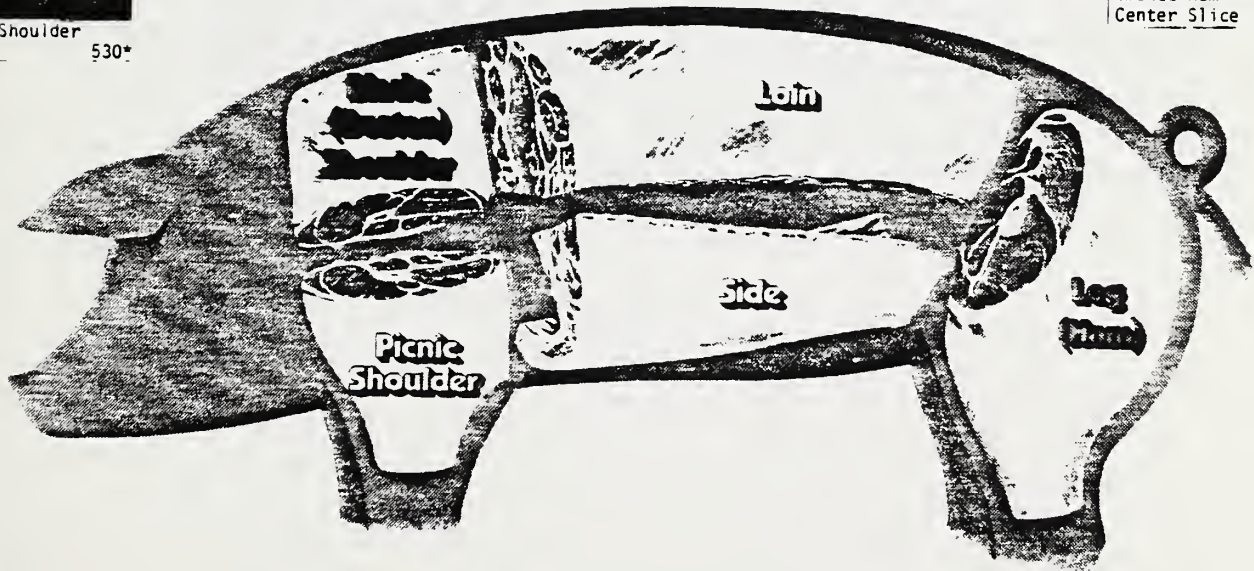


Sliced Bacon 539*



Smoked Ham
Center Slice

*NAMP Number Institutional Meat Purchase Specification National Association of Meat Purveyors



Got a question about pork?

Call or Write:

Foodservice Department, National Live Stock & Meat Board
444 North Michigan Avenue, Chicago, Illinois 60611 312-467-5520

Another part of the Meat Board's coordinated pork program with the National Pork Producers Council.



Bacon (Ch)¹ is produced from pork bellies. Top quality bellies range in size from 9-11 pounds, 11-13 pounds and 13-15 pounds. Usually the heavier bellies produce fatter, less tender and darker colored bacon, which is less desirable than bacon produced from thinner bellies. The smaller bellies have a higher lean to fat ratio which shrinks when cooked, curls less and has a more even appearance. A packer may produce one brand of bacon from bellies weighing 9-11 pounds and another brand from 11/13 pound bellies, etc. Bellies weighing around 20 pounds or more are used for dry salt pork (fat back). (There are no U.S. Grade standards for bellies.)

Bellies are processed into bacon by first removing the rinds (skins) from the bellies prior to curing. A pickle (similar to that used in hams, i.e., water, salt, sugar, sodium nitrite and phosphate) is injected into the bellies with a multi-needle stitch-pump machine. The pumped bellies are hung in a smokehouse. As with hams, the cooking process may be a multi-stage process whereby temperatures are gradually increased or a one-temperature process may be used. In either case the product is cooked to an internal temperature of 125°-132°F. Cooking to this level helps develop and stabilize the color of the meat. Smoke may be administered during all or part of the process. Relative humidity is carefully controlled during the cooking/smoking process where applicable. After cooking, bellies are chilled to an internal temperature of approximately 26°-28°F then pressed to a uniform width and thickness and sliced.

Quality bacon slices should not be less than 1/2 inch and preferably not less than 3/4 inch in depth (thickness of the slab). Bacon is sliced to three different thicknesses: 1/32 inch (thin), 1/16 inch (regular) and 1/8 inch (thick). Bacon is also sold according to the number of slices per pound, 14-16, 18-22, 22-16 and 26-30. The thickness and width determine the number of slices per pound.

Institutional (food service) bacon is available in several pack styles:

- (1) Shingled - slices are overlapped as in retail packs which may or may not be vacuum packed.
- (2) Stacked layer - slices are placed one on top of another, but on a slight angle to enable individual slices to be removed.
- (3) Layout flat pack - individual slices are laid out on a heat or flame resistant disposable parchment that can be placed in an oven or turned over into a pan or onto a grill for cooking over or under heat.

1. Ch - chilled; F - frozen; C - canned; D - Dry

"Hotel Style" is a loose term that may have a different meaning to each packer, but generally refers to a food service pack. Food Service bacon is bulk packed in wholesale units of fixed weights. Popular sizes are 10, 12 and 20 pounds.

Federal Specifications Standards: PP-B-81H(2)

Commercial Item Description: A-A-20023

Product Example: Oscar Meyer #02043 (Layout Style, av. 400 slices/box)

Pack Example: 2/10-lb. bags, 20-lb. box

Price Unit: lb.

Purchase Unit: Box (Fixed weight)

Store for usage: Chilled

Cooked and Frozen Bacon

This product is ready to heat and serve. It is prepared by cooking raw bacon simultaneously on both sides. As with raw bacon, cooked bacon can be heated in bulk or individually as needed. Thawed slices can be prepared in 4 to 5 minutes in a conventional oven at 400°F, 3 to 4 minutes in a convection oven at 375°F, 1 to 1-1/2 minutes in a broiler (5 to 6 inches from the element), 30 to 40 seconds on each side on a grill at 375°F, and 20 to 30 seconds in a microwave (topped with paper towels). These instructions are based on the product being cooked from the thawed state. Additional time will be required if prepared from the frozen state. After heating, the bacon can be placed on steam tables, under heat lamps or in a warming area to maintain temperature.

The use of cooked bacon saves time in food preparation as well as in cleanup, reduces the task of grease disposal and minimizes the risk of grease fires.

Cooked bacon is sold with a fixed number of slices per carton, i.e., a constant number of slices per case (300 is common). Usually 10 slices are packed on a sheet of flame proof paper (parchment) with 10 (or 15) sheets to a plastic pouch. The pouch is vacuum packed and frozen. Three pouches (of 10 sheets to a pouch) or two pouches (of 15 sheets to a pouch) are placed in a master carton.

Some processors may pack bacon 500 or 600 per case. This is done by packing 50 or 60 slices per tray. The trays are then vacuum packed and 10 are placed in a master carton, resulting in either 500 or 600 slices per case. The bacon is heated by placing trays directly into an oven which makes this pack ideal for high volume operations.

IMPS Number: None

Product Example: Haberstroh Regular Cut #R-2/150

Pack Example: 2 pouches of 15 sheets with 10 slices per sheet (150 slices per pouch).

Price Unit: lb.

Purchase Unit: Case

Store for usage: Chilled

Cooked Canned Bacon

This is the same pack as frozen cooked bacon except that after cooking, the bacon is laid out on parchment paper, rolled and placed in a number 10 can and sealed. A can which contains 300 slices can be stored at room temperature. Canned cooked bacon is packed 3/#10 cans to the wholesale unit (case). This product is used primarily by operations who have limited freezer or cooler space and must control portion cost. If all the bacon is not used at one time, the remainder may be rolled up and put back in the can, closed with a plastic lid that is provided and refrigerated.

IMPS #: None

Product Example: Swift #93703

Pack Example: 3/#10 cans

Price Unit: Case

Purchase Unit: Case

Store for usage: Dry (Refrigerate after opening)

Canadian Style Bacon

Canadian style bacon is also referred to as Canadian back bacon or just Canadian bacon. This product is produced from the large muscle of pork loins (backs) and thus differs greatly from bacon manufactured from pork bellies. Canadian style bacon must comply with IMPS #501 and is very lean since there is little or no intermuscular fat and the exterior fat is trimmed to 0.3 inch.

Canadian bacon is produced by the needle pumping of boneless loins, then covering the loins with brine and pickling for two to five days depending on the size. After removing from the brine solution, the loins are washed and placed in stockinettes and hung in a smokehouse and cooked to an internal temperature of around 150° to 155°F. At some point during or after the process, the loin may be cut into 2 to 3 pieces (chubbs).

Canadian bacon is available shrink wrapped and sold in variable weights averaging three to seven pounds per chubb. Chubbs are packed 3 per box or case.

IMPS #: None

Product Example: Hatfield Canadian Bacon #2295

Pack Example: 3/7-lb. per box, Cello Wrapped Price Unit: lb.

Price Unit: lb.

Purchase Unit: Box (Variable weight)

Store for usage: Chilled (may be purchased frozen)

Turkey Canadian Bacon

This is a turkey product cured in a similar manner to Canadian bacon. Boneless turkey thighs are stuffed into casings to simulate the loins.

IMPS #: None

Product Example: Bil Mar #16901

Pack Example: 4/10lb.

Price Unit: lb.

Purchase Unit: Box or Case (Fixed weight)

Store for usage: Chilled (may be purchased frozen)

Dry Salt Pork or Fat Back (Ch)

Dry salt pork must comply with IMPS #562. This product is made from bellies weighing 20 pounds or more and is either dry-cured or pickle-cured. In the dry-cure method bellies are rubbed with salt and stacked in a cooler. Every seven days the product is rubbed with salt again for a total of three to four rubbings over a span of 21 to 28 days, depending upon the thickness of the bellies.

In the pickle-cure method, bellies are stitch pumped with a brine solution, and immersed in brine where they remain for one day for each pound of weight. (Rule of thumb)

There is no traditional pack for this product but many packers put one piece to a box or ship the required number of pounds in a single box, i.e., if 50 pounds is ordered, the packer would ship 50 pounds in a single box.

IMPS #: 562

Product Example: Smith Meats #4570

Pack Example: 20-lb. box

Price Unit: lb.

Purchase Unit: lb. or piece (Variable weight)

Store for usage: Chilled

Jowl Bacon (Bacon Squares) (Ch)

Jowl bacon must comply with IMPS #556. Fresh trimmed hog jowls (from the cheeks of the animals) are prepared the same as regular bacon made from bellies. These bacon squares, as they are sometimes called, are fatter than regular bacon and are used for seasoning foods. Bacon squares average 1/2 to 3 lb. each and may be packed up to 60 pounds per box.

IMPS #: 556

Product Example: Smith Meats

Pack Example: lb. or piece (Variable weight)

Price Unit: lb.

Purchase Unit: lb. (Variable weight)

Store for usage: Chilled

Storage and Care

Chilled sliced bacon may be kept for almost two weeks if layer packed and three weeks if vacuum packed at temperatures of 32-35° F. Chilled bacon can be held longer by simply freezing. Layer packed bacon will keep for 2 - 2-1/2 months when frozen. Vacuum packed bacon will keep for three months, without noticeable loss of quality.

Canadian bacon has slightly longer keeping qualities than regular bacon. Unsliced chubbs of Canadian bacon will keep up to three months at 32-35° F and about one month if sliced. Chubbs of Canadian bacon will keep up to six months when frozen and held at zero degrees and below.

Jowl bacon has about the same keeping qualities as sliced bacon and salt pork (fat back). They can be kept for about six months, at chilled temperatures and much longer (nine to twelve months) if frozen.

Frozen cooked (prefried) bacon and other frozen bacon products will keep up to nine months when properly packaged and stored at zero degrees F.

Turkey Canadian bacon is usually purchased frozen and sliced on the premises after tempering (partially thawing). Turkey Canadian bacon has a suitable frozen shelf life of about three months and can be held in a refrigerator for about ten days after defrosting. If purchased fresh, Turkey Canadian bacon has a shelf life of about two to three weeks at 32-35°F.

Canned cooked bacon has a storage life of about 24 months when stored at 70°F year round average temperature. However, the product should be placed in a refrigerator after the can is opened.

Cured and Smoked

The USDA recently (April 15, 1985) revised its regulations pertaining to cured pork products, i.e., hams shoulders, picnics, butts, and loins. The regulations govern the labeling of cured pork products and are based on the percentage of meat Protein Fat Free (PFF). Basically the revisions allow for four product names with qualifying statements, as follows:

- (1) Common and usual name. (i.e., Cooked Ham);
- (2) Common and usual name with natural juices. (i.e., Cooked Ham with Natural Juices);
- (3) Common and usual name and Water Added. (i.e., Cooked Ham Water Added); and
- (4) Common and usual name and Water Added Product - x% of weight is added ingredients (i.e., Cooked Ham Water Added Product - 25% (for example) of Weight is Added Ingredients. (Added ingredients refers to water, salt, etc. present in the cured product in excess of the normal amount in the uncured product.)

The regulations also provide definitions for product groups as follows:

- Group I - Cured pork products which have been cooked while imperviously encased. (Example: Canned Hams)
- Group II - Cured pork products which have been water cooked. (In film) (Example: so called "Boiled Ham")
- Group III - Boneless smoke house heated cured pork products. (Example: Boneless Cured and Smoked Ham)
- Group IV - Bone-in or semi-boneless smoke house heated cured pork products. (Example: Semi-boneless Cured and Smoked Ham)

Hams (or other cured pork products) also may be classified by the internal temperature reached during cooking, for example:

All hams except Country hams must reach an internal temperature of 142°F for one minute of 144°F instant to ensure the destruction of trichina, the cause of trichinosis (a disease caused by the presence of trichina - nematode worms - in the intestines and muscles of hogs). Hams heated only to this temperature should be further cooked before eating.

Smoked hams must reach an internal temperature of 144°-147°F. Smoked hams must be further cooked before eating, usually to a temperature a 160°F.

Cooked hams must reach an internal temperature of not less than 148°F. Most processors generally cook these hams to at least 152°F to improve the palatability without additional cooking by consumers. Cooked hams may also be described by such terms as fully cooked, thoroughly cooked, ready to eat, ready to serve, etc. Further cooking is optional.

Curing. Most hams produced commercially are pickle cured. The pickle generally consists of salt, sugar, sodium nitrite and phosphate. Corn syrup or sodium erythorbate may also be added. The pickle is injected into a ham by one of two methods: (1) By the use of an artery pump whereby a needle is placed in the artery of a ham and the amount of pickle required is injected into the arterial system where it diffuses into the muscles of the ham; and (2) By the use of a stitch pump whereby a multi-needle machine injects the curing pickle directly into the muscles.

After pumping, hams may be placed in a vat and covered with pickle for 3 to 7 days or they may go directly to the smokehouse. Vat cured hams develop a more uniform color and distribution of cure than those that go directly to a smokehouse because the pickle is being absorbed into the muscle both from the inside and the outside. Also the added time enables the cure to be distributed evenly throughout the muscles.

After hams are cured, they may be either partially or fully boned. The shank may be removed and the ham trimmed, leaving the desired amount of fat cover on the top side to enhance juiciness when the ham is heated. Moreover, a ham may be shaped either round or flat, by pressing the ham between wire screens.

Cooking and Smoking

Hams may be cooked in a smokehouse in one of two ways: (1) By gradually increasing the temperature to 180°F over a period of 6 to 8 hours (i.e., 2 hours at 130°, 2 hours at 150°, 2 hours at 170° and 2 hours at 180°F); or (2) by maintaining a constant temperature of approximately 175°F until the required internal temperature of the ham is reached (144-147°F for smoked and 148-152°F for cooked).

Hams are usually vacuum packed in shrink film. Small hams, 3 to 5 pounds, are usually packed 6 to a master carton; larger hams may be packed 4 to a case or sold individually. According to government regulations, these hams fall in Group 3 or Group 4 depending upon whether they are boneless or bone-in.

IMPS #: 401-402B, 500-509

Product Example: Hormel Cure 81 Whole Ham

Pack Example: 4/box approximately 7.5 lb. each

Price Unit: lb.

Purchase Unit: Each

Store for usage: Chilled

Sectioned and Formed

Sectioned and formed hams are made from chunks (or sections) of fresh or thawed pork hams. This is a fairly recent advance in technology in which the muscles or chunks are massaged and tumbled to extract salt soluble protein which helps the chunks bound together. This process allows more moisture to be incorporated into the product, thus increasing yields and making it possible to produce solid piece of meat, of the shape desired, from small chunks. It is an excellent method for producing hams to be sliced for portion serving.

Shanks may be legally used in this type of product but in no greater proportion than in the natural ham. Excess surface fat, seam fat, and tendons or sinews are removed. Large muscles or chunks are split lengthwise to ensure proper curing since the cure must be absorbed from the outside.

Curing is accomplished by the pickle and ham chunks in the tumbler and the tumbler which is energized 15 minutes per hour until the brine is absorbed. The chunks of meat are then stuffed into molds, fibrous casings or cans and heated to bind the pieces together. The formed hams may be cooked in the smokehouse or water cooked as described for other type hams until they reach an internal temperature of 152°F. As with all hams, sectioned and formed hams must be chilled rapidly to 34°F.

Cooked Hams

Although the cured and smokehouse cooked hams as previously discussed may be fully cooked, hams can also be fully cooked in water tanks. The hams are made from cured hams which are boned and stuffed into metal molds, immersed in 165°-180°F water in a cook tank and heated to an internal temperature of 152°-160°F. The cooked hams are removed from the molds, washed, trimmed and packaged in shrink film. These hams are seldom smoked. Cooked hams destined for the food service trade are sold either whole or in sliced form .

This type of ham is frequently referred to as a "boiled ham", but this is a misnomer since the hams are not cooked in boiling water. Some packers put 2 or more hams in a case, but most processors sell on an individual basis.

According to government regulations, these hams fall into Group 2, as previously defined, since they are water cooked but not imperviously encased.

Canned Hams

Canned hams are produced in much the same manner as cooked hams. The cured product, which may be sectioned, is stuffed into pullman-base cans (4-7/8 x 4-5/8 inch base with a height of from 10-1/2 to 14 inches) or pear shaped cans (for hams weighing from 1-1/2 pounds to approximately 13-1/2 pounds). Canned hams which are to be stored at chilled temperatures are cooked to an internal temperature of 152°-160°F. If the product is to be shelf-staple, it must be retorted to 250°F for 12 to 18 minutes.

"Canned" hams can also be cooked in a high density polyethelene material called "forming and non-forming film".¹ The process is called "cook-in hams". The hams may be formed into any desired shape and the film does not have to be removed until the ham is prepared for serving. These hams are chilled to 38°-40°F as quickly as possible after cooking and stored under refrigeration.

Baked Hams

Baked hams are prepared from cured hams that are cooked in dry heat and according to federal regulations, "for sufficient time to permit the ham to assume the characteristics of baked items." Some processors use a smoker with hickory chips to smoke the hams to an internal temperature of 170°F. (A special honey glaze is used and the ham is topped with pineapple slices and maraschino cherries.) The bone is left in the ham and is spiral sliced at approximately 1/16 inch. This type of ham is available whole or in halves. During the holidays, many companies choose this type of ham for gifts to clients or employees.

A baked-style can be produced at much less expense. These hams are prepared from conventional, boneless, cooked hams. They are dipped in gelatin-base glaze usually consisting of corn syrup, pineapple juice, water, gelatin, brown sugar and spices. They are decorated similar to the baked hams and are sold in halves or whole in individual boxes.

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1. A mixture of nylon and surlyn.

Ham Slices

Ham slices can be purchased sliced from boneless hams which are prepared in any of the foregoing manners. Probably most ham slices are produced from sectioned and formed hams. These hams are produced in any size and shape desired.

The hams are machine sliced (ends are excluded) into various thicknesses and portion weights, layer packed interleaved with double waxed paper. The pack will vary with the type of ham and the portion size. For sandwiches, a 4x4 pullman ham, sliced 10 to the pound, may be the product of choice but for a luncheon plate, a round or flat (oval) 3 oz. size may be more appropriate.

Product Example: Continental Meats #1928

Pack Example: 95/1.6 oz./box, 9-lb. 8 oz.

Price Unit: lb.

Purchase Unit: lb. (Fixed weight)

Store for usage: Chilled (may be purchased frozen)

Canned Ham Patties

Ham patties may be made from a combination of fresh hams and fresh ham trimmings. The product is ground, seasoned and cured with added spice. Hickory smoke is added for additional flavor. The mix is formed into 2 ounce patties and packed in 400 x 700 cans (cylindrical). Waxed paper is interleaved between the patties after which the cans are closed and the product is pasteurized. Canned ham patties must be stored under refrigeration. Patties are packed either 18 or 22 to the can with 12 cans to the master case. When delivered, ham patties are ready to heat and serve, usually in a hamburger bun.

Frozen Ham Patties

The same ham patties described above may be individually quick frozen and bulk packed in layers in a box with about 80 two-ounce patties to the box, and six 10-lb. boxes (480 patties) to the master carton, ready to temper and/or heat and serve.

Ham and Biscuit

This product is made with a 3/4 oz. slice of cured and smoked ham placed between two halves of a buttermilk biscuit. The product is frozen and packed two biscuits in a packet which weighs 2.75 oz. and measures 2-1/2" in diameter. There are 60 packets (120 ham and biscuits) per wholesale carton ready to thaw and serve or heat and serve.

Country Hams

Originally, country hams were produced from hogs grown in the peanut belt of Virginia and North Carolina. The Smithfield ham is probably the most famous of this type ham. Smithfield hams may be labeled "Smithfield" only if they are produced in the town of Smithfield. By the same token, Country hams must be processed in the country; if not, they must be called "Country style" hams.

Country hams differ greatly in flavor and appearance from pickle cured hams discussed previously. Although a country ham is very salty, dry and hard, it has much more flavor than the pickle cured product. Historically, Southerners cured hams (and picnics) at hog killing time in the fall by packing them in bins with salt, sugar and sodium nitrate. After a month or so the pork was hung in the "ham house". The fall cold preserved the meat from spoiling during the winter until the cure was absorbed. When the meat was cured, the heat of the summer could not spoil the meat.

Today, Country hams are cured under refrigeration at a temperature of 36° to 40°F and at a relative humidity of 70 to 90 percent. Hams are packed in layers up to 4 feet high for curing with the cure shoveled on each layer. In addition, many processors rub the cure around the bones of the shank and butt as well around the aitch bone. About every 10 days the hams are removed and the process repeated. The curing process takes approximately 30 to 40 days, depending upon the size of the hams. After the hams are cured, another three weeks is required for the salt to equalize throughout the ham. This process usually takes place in the same room at the same temperature and humidity as the curing process.

After the curing and equalizing processes are complete, the Country hams are aged for a minimum of 6 months by hanging from a rack and holding at a temperature of 70-95°F and a relative humidity of 50-60 percent.

Country hams are also available "smoked". The smoking process is accomplished by placing the hams in a smoke room for one-two days at 70-90°F. Smoked Country hams have a deep brown color.

Country hams and shoulders may be stored without refrigeration because of the low moisture content (50-60%) and the high salt content (4-1/2 - 5-1/2%). According to federal regulations, Country (and Country-style) hams must be free of trichinae, be dry cured, have a salt count of at least 4 percent and during processing must shrink a minimum of 18% during processing.

Country hams maybe packed in stockinettes and are sold by catch weights. There is no IMPS number for Country hams.

Storage and Care

Frozen ham patties and ham biscuits have a shelf life of about three months. Ham patties can be heated directly from the frozen state or tempered for a day in a refrigerator prior to heating. Ham and biscuits can be tempered for about two days in a refrigerator before heating prior to serving or serve cold.

Frozen ham slices should be allowed to temper for two days in a refrigerator before heating and serving. This product will keep for about one month in a refrigerator or three months in a freezer. The length of time will depend upon the thickness of the slices. Thin slices suffer dehydration faster than thick slices.

Chilled. Although ham and biscuits and sliced ham may be purchased chilled, the items usually pass through the marketing system to the food service trade as frozen products. However, if received in the chilled form, try to turn them through the refrigerator in one to two weeks.

Cured and smoked hams are generally kept under refrigeration at 32-35°F. At this temperature they will maintain top quality for about two months if properly packaged. The same holds true for canned which have not been retorted. Keep in mind, however, that the length of time that a product can be kept at top quality under refrigeration depends on the length of time it has been in storage and the treatment received prior to arrival at the food service kitchen or warehouse. For this reason, it is recommended that the inventory of chilled cured hams be turned over every four to six weeks.

Although Country hams will keep out in the open air, they should be placed in a refrigerator after slicing. Moreover, Country hams may be easier to slice if they are tempered in a refrigerator for 24 hours before serving.

Canned hams which have been retorted may keep up to three years if held at below 70°F. It is preferred, however, to temper retorted canned hams in a refrigerator before serving. This makes it easier to slice. The product should be kept under refrigeration once the can is opened.

Canned ham patties which are similar to frozen patties can be held for a year or more at 40°F in a dry area without deleterious effects. However, once the can is opened, the product should be placed under refrigeration.

Pork shoulders are available in two primal cuts: (1) a picnic shoulder, which is the shank (or lower) part (half) of the shoulder; and (2) a Boston butt (or Boston shoulder) which is the upper part.

Picnic Shoulder

A cured picnic shoulder (picnic) must comply either with IMPS #525, which is cured only, or IMPS #526, which is smoked as well as cured. Picnic shoulders are cured or cured and smoked in accordance with the same procedures described for hams, i.e., they may either be artery pumped or stitch pumped. Cooking procedures and temperatures are similar. Picnic shoulders may be subjected to smoke during part or all of the cooking process. Cured and/or smoked picnics average from four to twelve pounds and are usually sold on an individual basis by weight. Picnics are less expensive than hams because they have a lower ratio of lean to bone, and contain relatively more fat and connective tissue.

Picnic shoulders may also be sold boneless, skinned, rolled and tied. Rather than rolled and tied, some processors stuff picnics in casings and cook them in water in the same manner as hams. Picnics packed in any of the ways discussed in this paragraph must conform to IMPS #527.

Picnic shoulders may also be dry cured according to the same method described for Country hams. The same regulations apply.

Boston Butts

The Boston or shoulder butt must conform with IMPS #530. This is a boneless product which is cured and smoked in accordance with the same procedures for hams. The same internal temperatures apply. The butts are usually stuffed into fibrous casings or stockinettes before smoking. The weight range of Boston butts is from 1-1/2 pounds to 6 pounds. Although Boston butts are normally packed about 20 pounds to the master carton, they are often sold individually.

Boston butts may be cooked as roasts or sliced thin, fried and served as bacon substitute, particularly if an extra lean product is preferred.

Capacollo

This is a Boston butt which is rubbed with spices and paprika after curing and prior to cooking to give the product a distinctive flavor.

Storage and Care

The guidelines for storing and caring for pork shoulders are the same as for hams.

In 1985 new regulations were initiated for cured pork products including hams, picnics, cooked and uncooked cured hams and loins, (Canadian bacon), cooked and uncooked cured shoulder butts and picnics, ham patties, as well as other less prominent cured pork products. Whereas the new 1985 labeling regulations for hams and picnics are based on the minimum meat protein percentage, the old regulations were based on the weight of the cure (basically water) added to the product. New technology which allows a much higher yield and thus many diversified new products is, in part, responsible for the new regulations.

In the past, the cured weight of a ham could not exceed the weight of the leg of pork it was made from. Inspectors weighed the product before and after curing and calculated the weight loss during further processing to determine that the weight of the finished product did not exceed the "green weight" (before curing). An exception to this was canned hams which actually lost meat weight after packing, due to weepage. Additional liquid was allowed during the curing process which permitted a 7 percent increase in total weight but the label had to read "(Packed) In Natural Juices".

Hams packed in high density plastic (instead of cans) were required to read "Water Added" since the ham could not shrink to its green weight.

Other packs were allowed to have up to 10 percent water added, i.e., 10 percent more than the "green weight", provided they were labeled "Water Added".

A new technology of tumbling hams during the section and forming process permits much higher amounts of water to be added. The new regulations acknowledge this technology for new products that were not permitted under the old regulations.

The 1985 labeling regulations¹ are based on measuring the actual meat protein, not the water in the product. Thus, a ham may be labeled:

"Ham" if the product contains 20.5% protein after the fat has been removed.

"Ham with Natural Juices" if the product contains 18.5% protein.

"Ham-Water Added" if the product is at least 17% protein.

"Ham and Water Product" - xx percent of weight is added Ingredients," if the product is less than 17% protein. The actual percentage of the added weight is shown. This last category allows for the use of other protein in the processing of pork products but assures that consumers are informed with accurate labeling.

1. The new regulations do not mention "Turkey Ham" because these regulations discuss only cured Pork Products. The turkey meat used in preparing hams will, however, contain more than 20.5 percent protein.

Labeling Picnics

Labeling regulations described for cured hams also apply for cured picnics. However, the protein requirements vary slightly. A picnic may be labeled:

"Cooked Shoulder, Butt or Picnic" if the product contains 20% protein after the fat has been removed.

"Cooked Shoulder, Butt or Picnic with Natural Juices" if the product contains 18.0% protein.

"Cooked Shoulder, Butt or Picnic - Water Added" if the product is at least 16.5% protein

"Cooked Shoulder, Butt or Picnic - Water Product" - xx% of the weight is added ingredients, less than 16.5% protein. (See Ham)

FOOD FACTS

PORK CHOPS

Pork chops are available as center cut which must conform to IMPS #1412 and regular cut which must conform to IMPS #1410. As indicated, center cut chops come from the center of the loin. Regular chops are cut from the full loin thus include the center cut chops. The size of a pork chop is influenced by the size (circumference) of the loin and the thickness of the cut. Pork chops for the food service trade are available from 3 oz. up and may be individually quick frozen and layer-packed in 10-pound boxes which in turn are packed four to six boxes to the master carton.

Breaded and Cooked Pork Steaks

Breaded and cooked pork steaks are prepared from the boneless butt (IMPS #1407). The steaks are sliced, breaded and cooked and are available in sizes which range from 2 to 4 oz. The weight includes the breading which must be limited to 25%. Pork steak products are usually packed in 10-lb. boxes, four or six boxes to the master carton.

Rib Patties

Rib Patties are made from ground or flaked pork trimmings with seasonings added. The product is formed into the shape of a pork chop then breaded with a maximum of 25 percent breading. It is available in sizes ranging from two to four ounces. Rib patties are individually quick frozen and packed in layers, 48 or more portions to a box and four or six boxes per master carton.

The difference between pork steak products and chopped or ground pork products is that the steak products are solid meat products while the so-called chopettes, choplets, patties, etc. are mechanically formed into various shapes from ground or chopped meat. Both the steaks and chopped products may be breaded and/or cooked. The breading is usually seasoned to enhance the palatability of the product.

Storage and Care

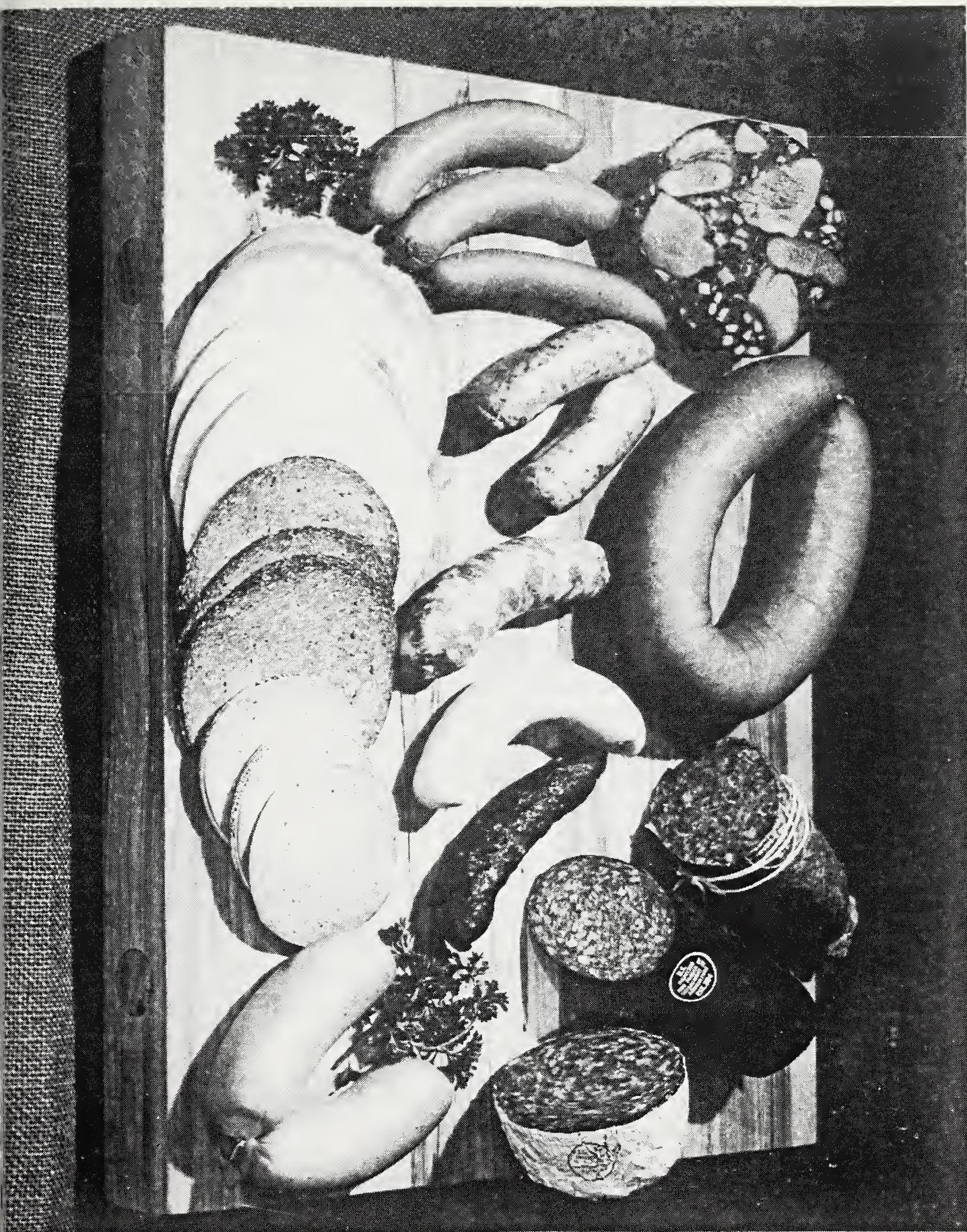
Frozen pork chops (unbreaded) may be held in freezer storage for four months from the time of production. These products can be cooked directly from the frozen state or they can be tempered in a chillroom for 24 hours prior to cooking. If the chops are to be breaded prior to cooking, about two days of tempering might be required. The length of time will depend upon the temperature of the tempering room and whether individual boxes are removed from the master carton.

Frozen breaded steak (or steak products) have a storage life of only about two to three months depending upon the breading used. Some breading will have a longer shelf life than others without changing flavors or texture. These products should be cooked directly from the freezer so as not to disturb the breading.

Because of the seasoning used in the mix of frozen rib patties as well as the breading, the preferred storage life of these products is two months. Although, depending on the seasoning, original flavor and moisture content might be retained up to three months or longer.

GROUP III - SAUSAGE PRODUCTS

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Types

There are five main types of sausage, according to USDA classifications: fresh sausages, smoked sausages, cooked sausages, dry and semi-dry sausages and different styles of luncheon loaves.

The predominating meat in most sausage is pork although beef and veal are also used. It has been estimated that one out of ten pounds of meat produced in the United States is consumed as sausage. Sausages differ according to the kind of meat and seasonings they contain and are generally classified by the way they are processed.

Pack and Size. Although examples of pack and size of sausage products are indicated herein for most items, there seems to be almost as many ways to pack sausage products as there are sausage makers. Some of the firms have exact weights for certain items but many firms sell on a variable weights basis.

FRESH SAUSAGES

Fresh sausages are made from uncured ground raw pork, beef and/or veal and are neither cooked, smoked or dried. Mechanically deboned pork may be used, but not pork by-products. Its taste, texture, tenderness and color are directly related to the ratio of fat to lean as well as the seasoning used. Trimmings from primal cuts such as hams, loins and shoulders are often used. These items need not be certified to be free of trichina¹ since the end product, sausage, is normally cooked before eating. If seasonings are used which color the product to make it appear that it has been cooked, certification is necessary. Sausages are made by grinding and blending meat cuts with seasonings. The products can be purchased in bulk (stuffed in casings), in links or patties. Fresh sausage must be kept under refrigeration and thoroughly cooked before serving.

Fresh Pork Sausage

Fresh pork sausage is made from fresh and/or frozen pork. Regulations permit up to 50 percent total fat, and up to 3% water or ice may be used to facilitate chopping or mixing.

Although the methods of packaging fresh sausage varies from one packer to another, a typical bulk pack is 25-lb. packages per box; packed in links, 96/1 oz. to the box; or patties, 96/1 oz., 66/1.5 oz., 48/2 oz., or 39/2.5 oz. to the box.

1. To be certified, an inspector must verify that the pork has been frozen for the required length of time at the required temperature or cooked to an internal temperature of 144°F (instant).

Fresh Beef Sausage

Fresh beef sausage is the same as fresh pork sausage except that it is made from beef only. Regulations permit only up to 30 percent total fat. Packaging is also the same as fresh pork sausage.

Breakfast sausage

Breakfast sausage may be made from a combination of fresh or frozen pork, beef, veal and meat by-products. IMPS #810 govern this product. The fat content is limited to 50 percent and binders or extenders are permitted up to 3-1/2 percent of the finished product.

Breakfast sausage may be purchased bulk packed in 5, 6, 8 or 10 lb. packages; packed in rolls of 1, 2 or 3 pounds using artificial or natural casings or packed in links of 6-8 or 8-10 links per pound. For the product in unlinked hog casings, no more than 1 piece can be less than 12 inches in length in a primary container. A typical pack of links contains 80/2 oz. links in a box.

Whole Hog Sausage

Whole hog sausage is prepared from fresh or frozen pork in such proportions as are normal in a single animal. It is the usual custom to make use of tongues, hearts and cheeks but, in the same proportion as found in the animal used. The finished product can contain no more than 50% fat. There are IMPS for this whole hog sausage.

Whole hog sausage is available in 10-lb. bulk, 12/1-lb. cello rolls, and patties of various sizes, i.e., 96/1 oz., 66/1.5 oz., 48/2 oz. and 39/2.5 oz, per box, usually with 6 boxes to a master carton.

Italian Sausage

Products which are labeled specifically "Italian Sausage" must be made only from pork. If beef and/or veal is used, the product must be labeled "Italian Sausage with Beef (Veal or Beef/Veal)". However, if beef and/or veal is used, pork must constitute the major portion of the meat content. The fat content of the final product is limited to 35 percent. Seasonings used include salt, black and red pepper, fennel or anise. Italian sausage is available in bulk (4/10-lb.) or in patties of various sizes.

Other Fresh Sausages

Examples of other fresh sausages are weisswurst (although some weisswurst is cooked), fresh Polish sausage and some bratwursts. There are no IMPS for these products. These sausages are packed in various ways. For example, Polish sausage is vacuum packed 5-pounds poly bags and bratwurst in 3-pounds.

FRESH SMOKED SAUSAGE

Fresh smoked sausages are the same as fresh sausages except they have been smoked usually over a wood fire but not cooked. This gives them a different color and flavor. The smoking makes it less perishable than fresh sausage, but the product must be used within four to five days and cooked thoroughly before serving.

Fresh Smoked Kielbasa

Fresh smoked kielbasa is a highly seasoned Czechoslovakian sausage made from coarsely ground pork, beef and mutton. It is stuffed in a roll casing approximately 1 1/2 inches in diameter and 12 inches long.

Although Kielbasa is usually packed 10 pounds to a box, 4 to a case, packs may vary from one packer to another. Whereas some packers sell Kielbasa on a fixed weight, others use variable weights.

Country Style Pork Sausage

Smoked country style pork sausage is all pork, mildly cured and smoked. Packaging is similar to the fresh product.

Mettwurst is also a smoked uncooked sausage product prepared with cured beef and pork. Seasonings include allspice, ginger, mustard, and coriander. It has a smooth, spreadable consistency.

COOKED SAUSAGE

Normally, cooked sausages are prepared from fresh uncured meats although cured meats may be used. These sausages are thoroughly cooked in their casings and many are served cold but some (hot dogs, for example) may be heated. Three types of cooked sausages are discussed in this manuscript, i.e., frankfurters, bologna and braunschweiger. These products are marketed either frozen or chilled.

Frankfurters

Frankfurters are made from comminuted, semi-solid mixes prepared from one or more kinds of raw skeletal meat, including raw or cooked poultry meat, and seasoning. The final product may not contain more than 35 percent fat. If poultry meat is used, it cannot be in excess of 15 percent of the total ingredients. After the frankfurter mix is stuffed into casings to form links, the product is hung on racks and cooked in a "smokehouse".

Frankfurters are also referred to as franks, weiners or hot dogs. The terms hot dog and frank are "All American" terms. Some packers reserve the term frankfurters for the all beef product and weiners for the pork and beef mixtures.

IMPS #800¹ provide the options desired to be specified by the purchaser. These include the formula, color, style and size.

Frankfurters are sold either skinless or stuffed in a sheep or collagen casing. They may be natural or artificially colored. Frankfurters are sold by the pound in various lengths normally ranging from 6 to 17 per pound and from 4 to 10 inches in length.

Formula (major ingredients only)

- A - Beef and Pork (in any combination)
- A1 - Formula A plus non fat dry milk or calcium reduced dried skim milk.
- B - Beef and Pork (Beef is predominant)
- B1 - Formula B plus non fat dry milk or calcium reduced dried skim milk.
- C - Pork and Beef (Pork is predominant)
- C1 - Formula C plus non fat dry milk or calcium reduced dried skim milk.
- D - Beef

Some franks are highly seasoned, (with garlic, for example), while others are very mild. Selling seasonings for franks is a highly competitive business for spice companies who are continually offering packers new combinations for testing. Accordingly, the best way to order franks is to select a preferred brand and stick to it.

The most popular pack for franks is in a 10 pound box with no master carton. Another popular pack is a 6 pound box, 8 or 10 to a master carton. As with many other sausage items, styles of packs of franks vary from one packer to another.

1. IMPS #800 does not mention franks made from turkey meat. Turkey franks contain approximately 25% to 30% less fat than franks made from the formulas shown below.

Bologna

Bologna is a smoked cooked sausage. The meat components consist of beef and pork, very finely chopped and stuffed into artificial or natural casings. The interior cut surface is smooth, light textured, light pink in background color and finely mottled with evenly distributed light to dark red flecks. The 1 to 1 1/2 pound size is ring style.

IMPS #801 provide the options which must be specified by the purchaser. These include the formula, color, style and size.

The formulae are the same as for frankfurters except that there is no formula D - All Beef.

Styles relate to the type of casing, artificial or natural. Sizes for artificial casing are as follows:

- 1 to 1.5 pounds (1.3 to 1.5 inches in diameter)
- 4 to 7 pounds (2.5 to 3.5 inches in diameter)
- 7 to 12 pounds (3.5 to 5 inches in diameter)

Natural casings are 1.0 to 1.5 inches (1.3 to 1.5 inches in diameter).

Bologna is sold by the pound or by the piece. It is usually packed 2-10 pound pieces to the case, or as a variable weight item. It is also sliced in 1/2 or 1 oz. slices and packed in 12 pound boxes, two to the master carton.

Braunschweiger

Braunschweiger is a cooked sausage made from fresh, cured and/or frozen pork, beef, and/or veal and at least 30 percent livers. It may also contain pork and/or beef fat. Binders may be used in accordance with the regulations. The product may have a smoke taste characteristic, which may be imported by the use of smoked meats, smoke flavoring or smoking. Although, onion is a required seasoning, other seasonings may also be used. The product may be labeled Braunschweiger - A Liver Sausage; or Braunschweiger - A Liverwurst. If prepared from a single species, the name may reflect that species, i.e., Beef Braunschweiger.

Braunschweiger sausages are available in loaf pans (square), sticks (round), or in saran tubes and in various sizes from an 8 ounces packed 12 to the box to variable weight sizes of four to eight pounds each packed two or three to the box. Sticks may measure two to three inches in diameter and weigh five to eight pounds each.

Other Cooked Sausage

Other types of cooked sausages include Knackwurst blood sausage, blood and tongue sausage, liver cheese and smoked links or smokies. These sausages do not have IMPS Numbers since IMPS address only the most popular cooked sausages; franks, bologna and liver sausage (Braunschweiger); #800, 801 and 803 respectively.

DRY AND SEMI-DRY SAUSAGES

Dry and semi-dry sausages are made from fresh meats that may be cured and smoked during processing. They go through a technical fermentation and drying process. Semi-dry sausages are fully cooked in the smokehouse while dry sausages are lightly smoked, if at all. Dry sausages are drier, firmer and usually cost more than semi-dry sausages.

Examples of semi-dry sausages are thuringer, IMPS #807, and cervelat (summer sausage), IMPS #809. Examples of dry sausages are dry salami, IMPS #808, landjaeger, cappicola, mortadella, lyons sausage, pepperoni and chorizos as dry sausages. Since some sausages may be processed by more than one method, it is always wise to read the label or ask the vendor for cooking instructions.

Most dry and semi-dry sausages are available in sticks of 1-1/2 to 4 inches in diameter, weighing from 12 oz. to 8 pounds.

LUNCHEON MEAT, LOAVES AND JELLIED PRODUCTS

Luncheon Meat

Luncheon meat is a cured, cooked meat food made from comminuted meat. Ice or water may be used to facilitate chopping or mixing or to dissolve usual curing ingredients.

Luncheon meats may be stuffed in artificial casings 3-1/2 to 4-1/2 inches in diameter. They may be mechanically formed into rectangular shapes by the use of wire or metal molds 3 to 4 inches in width and depth.

Imps #805 addresses minced luncheon meat and IMPS #815 addresses meat food product loaves. Food product loaves are baked (dry heat) or cooked (moist heat) products. These loaves are often named for the special ingredients or condiments they contain, i.e., pickle and pimento, olive loaf, ham and cheese loaf, etc. The individual loaves are encased or wrapped in grease and moisture resistant paper or plastic film.

Luncheon meats and loaves are available in sliced form. A pack example is 1/2 oz. sliced packed in 8-, 9-, or 10-pound fixed weight loaves with several loaves per case.

Meat Loaf

Meat loaf is a cooked meat product made from finely comminuted beef, pork and veal. Meat loaves may be rectangular or rounded in shape. The exterior surface may be smoked, unsmoked or browned in fat or oil. Individual loaves are encased or wrapped in grease and moisture resistance paper or plastic film. IMPS #814 addresses this product.

Meat loaves weigh from 4 to 8 pounds (fixed weight). A typical pack is 9/6 lb. loaves per carton.

Other sausage products available include such items as scrapple, liver pudding and bockwurst.

Storage and Care

Frozen: Sausage products suffer deteriorative changes as a result of freezing. If frozen storage is necessary, the storage time indicated herein will tend to minimize rancidity development and/or flavor changes. The times indicated include the times which the products may have been in freezer storage prior to arrival at a food storage warehouse.

If sausage products are received frozen they should be tempered in a refrigerator at the food service preparation site before serving.

Chilled: The holding times indicated herein are relative time periods. Keep in mind that the storage life at a food preparation site is relative to the date of packing. If, for example, a product has an acceptable life in chill storage of two weeks, this may be reduced to only one week if the sausage was held in cooler storage elsewhere for a week before arrival. This explains the reason some sausages, for example, franks and breakfast sausage, may be delivered frozen to the food preparation site, i.e., the chill storage time at the food preparation site is maximized, although the quality of the product may deteriorate slightly from freezing.

Recommended storage periods for Selected Sausage Products:

<u>Items</u>	<u>At 0°F</u> <u>Months</u>	<u>At 32-35°F</u> <u>Week</u>
Bologna - Lebanon	8	8
50% Beef	3-4	2
60% Beef	3-4	2
75% Beef	6	4
Cervelat - Dry	6	6
Soft (Thuringer)	3-4	2
Frankfurters - 5% Pork		
Carton	1-2	1-2
Flex Pack	1	3
Italian Sausage	3-4	2
Luncheon Meat (Loaf)	3-4	2
Pastrami	6	4
Pepperoni - Dry	6	4
Polish Sausage	3-4	2
Salami		
Cooked	3-4	2
Dry	5	6
Sausage (Breakfast)		
Bulk	3	2
Links	1	2

GROUP IV - POULTRY AND EGGS

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Chicken (*Gallus domesticus*) has been a major food source for man since long before recorded history. Many archaeologists and anthropologists consider the chicken to be man's first domesticated animal.

More than 200 breeds of chicken are recognized today. Chickens raised commercially for egg production and those for meat are different breeds. Consumption of chicken and turkey products averages around 70 pounds per person compared to around 35 pounds in 1960. Much of this increase can be attributed to the merchandising done by fast food operations. Egg layers in this country are mostly White Leghorns, while broilers are generally crossbreeds. One popular cross is a Cornish male with a White Plymouth Rock female.

The following USDA definitions are generally used throughout the poultry industry:

Broilers (or fryers) are young chickens under 13 weeks. An indication of age is flexible breastbone cartilage. Broilers weigh between 1-1/2 and 3-1/2 pounds, ready to cook. The smaller sizes are usually referred to as fryers and larger sizes as broilers. Frozen chicken parts are derived from broilers and fryers.

Roasters (or roasting chickens) are 3 to 5 months old. The breastbone cartilage is not as flexible as broilers. Roasters weigh from 3-1/2 to 6 pounds and have more flavor than broilers.

Fowl or hens (also called stewing chickens or baking chicken) are female mature chickens weighing 4-1/2 to 7 pounds. Most food service operators use boned chicken meat in place of stewing chickens.

Capons are surgically unsexed male chickens usually less than 8 months old, weighing from 4 to 9 pounds. Capons have a great deal of white meat and body fat and are exceptionally tender. Capons are usually cooked by roasting and have a very mild flavor.

Cocks (or roosters) are mature male chickens with coarse skin, meat which is less tender and darker than roasters and hardened breast bone tip. Cocks may weigh from 6 to 10 pounds and are rarely used in the food service trade.

Rock Cornish Game Hens (or Cornish game hens) are young immature chickens, 5 to 6 weeks old, weighing from 3/4 to 2-1/2 pounds, dressed. Cornish game hens are a crossbreed of a Cornish chicken and a Plymouth Rock or some other breed. Cornish game hens are available as whole birds, sold in matched sizes, by 2 oz.. steps from 12 to 30 oz.. and as splits or half birds sold in 1 oz.. steps from 6 to 15 oz.. sizes.

Rock Cornish Fryers, Roasters or Hens are a cross of a purebred Cornish and a purebred Rock chicken without regard to weight. Age and other characteristics determine whether it is labeled a fryer, roaster or hen.

A pullet is an industry term for a small roaster generally 3-1/2 to 4-1/2 pounds, approximately 14 to 16 weeks old.

An Open Range Chicken is a market term for a chicken which has been raised running free in a chicken yard as opposed to chicken houses like most production broiler/fryers. Because of the greater amount of exercise incurred by these birds, there is a greater proportion of lean to fat and thus the meat is considered by many to be more flavorful meat. There is an increasing demand for Open Range chickens from American cuisine operations and from ethnic restaurant operations.

Grades

Grades reflect the quality of poultry. Grade standards cover such factors as conformation ratio of edible meat in relation to bone, fat covering (or finish), and freedom of the carcass of defects such as cuts, tears, broken bones, pin feathers and discolorations.

U.S. Grade A is the highest grade and although it may be more expensive than other grades, it is probably worth the extra price when serving whole or cut-up poultry.

U.S. Grade B and U.S. Procurement Grades I and II may be a more practical choices if the meat is to be used in casseroles, salads, sandwiches and soups.

Styles or Forms

Chicken can be purchased fresh from local purveyors, either whole or cut-up; chill packed from packers (through local purveyors); or frozen, raw unbreaded, raw breaded, or breaded and cooked from packers (through local distributors). Chicken cut into pieces or parts can be purchased bone-in or boneless, comminuted and formed into patties.

Fresh Chicken

Fresh chicken for baking or roasting may be purchased whole, with or without giblets. Broilers may be purchased whole and cut up on premises or purchased whole and cut into portions by a local purveyor. Fresh whole chickens may be packed in ice, usually 30 pounds of chicken to the carton. Cut up chicken purchased from local purveyors may be packed in poly bags and kept well refrigerated either by mechanical means, ice, or CO₂ (carbon dioxide) pellets.

"1/4 Fresh" chicken may be purchased whole or cut up from packers who crust freeze (chill pack) the product to prevent weepage. These products are packed in shrink film or poly bags and must be held at 28° to 32°F during the marketing process and at the food service establishment.

Frozen Chicken

All styles and forms of chicken may be purchased frozen, either whole, cut up or by parts, bone-in or boneless, breaded or unbreaded, cooked or uncooked or pieces or patties. Ready to serve chicken parts, pieces and patties are high favorites in the food service trades because of better portion control and lower labor costs. Frozen chicken is often preferred over fresh because of the longer shelf life and the greater menu flexibility.

Although chicken parts, pieces and patties are individually quick frozen (IQF) and layer packed for easy removal, whole/cut up chicken may be bulk packed in 5-lb. boxes, six boxes to a master carton. Bulk pack chicken has to be partially thawed to separate the pieces before cooking. When packed in layers the parts are usually glazed in ice water at time of freezing to keep them separated and help protect the product from dehydration or freezer burn. The water added for the glaze is not part of the net weight of the product.

Raw cut up whole chicken and parts are available in different portion sizes. The following sizes are examples only and do not represent the total range of sizes and styles available:

- Cut up whole chicken with 2 breasts, 2 drumsticks, 2 thighs, 2 wings, with or without back portions
- Breast halves with no back portions packed 48/5.5 oz., 50/5.92 oz. and 43 6.88 oz.
- Breast portions with no back portions packed 90/3 oz. and 50/5 oz.
- Drumsticks packed 50/4.5 oz., 86/3.16 oz., 90/3 oz. and 100/2.72 oz.
- Thighs packed 50/5 oz., 86/3.9 oz., 90/3 oz. and 100/3.36 oz.
- Wings are packed in four sizes ranging from 2.5 ounces to 2 ounces.

Frozen chicken may also be purchased in splits and quarters which are often used by the barbeque trades. A split, as the name implies, is a whole bird which is cut in half longitudinally, from neck to tail; and a quarter is a half which is cut horizontally into two parts. Splits are often layer packed about 24 pieces to the box with each half ranging from 10, 12, 14 or 16 ounces. An example of a quarter pack is 48/10 ounces (average each); or 60/8.5 oz. each. Quarters can be purchased as all white or all dark meat.

Stove-ready raw chicken parts may also be purchased with bones removed. The two parts most commonly purchased in this manner are breasts and legs. The average weight of the boneless breast ranges from 5, 6, 7, 8 and 10 oz. while legs may be purchased in 4, 5 and 6 oz. sizes, both packed 24/per case. These are also available stuffed for gourmet service as cordon blue, kiev, romanoff, etc.

Breaded ready to cook chicken parts and pieces are available in numerous styles and portion sizes. Although chicken parts may be purchased in breaded form, the most popular items are chicken pieces represented strongly by nuggets, breast fillets, breast stripes and breast tenderloins.

Stove-ready parts and pieces usually have a nominal 25 percent breading, which means that the breading may range from 24 to 28 percent. By regulation the breading cannot exceed 30 percent without changing the name of the product. The flavor of breaded chicken may vary from one packer to another because of the wide range of spices used. Accordingly, food service managers must select a flavor most suitable to their patrons and stick with it until a more acceptable flavor comes along.

Packers of stove-ready chicken usually blanch (surface heat) chicken parts and pieces before breading to enhance the stickability of the breading. The packer may then put the product through a deep fat frying process, for only a few minutes, to further set the breading and provide a more appealing brown color.

Breaded chicken may be finished in a food service kitchen by heating in a deep fat fryer, convection oven, conventional oven, or even in a microwave oven. However, one must be careful to make sure that the product is compatible with the cooking method. Breaded chicken nuggets, for example, may be finished off in a fryer in three to five minutes at 350°F; 20 - 25 minutes will be required in a conventional oven at 450°F; and 15 to 20 minutes in a convection oven at 425°F. The foregoing is based on the product being placed in the equipment in a frozen state.

Several popular items purchased in breaded form ready to cook are as follows:

Breast strips: This item is taken from the large outside muscle of the breast and may be purchased in uniform sizes which average 1.25 ounces each or in random sizes (random sizes are less expensive). Breast strips are packed in bulk in a 10-lb. box, with four to six boxes to a master carton.

Breast Tenderloin: This item is the smaller muscle of the breast closest to the bone and may be purchased in a size which averages about 1.25 ounces. Breast "tenders" are packed approximately 120-130 in a 10-lb. box, four to six boxes to the master carton.

Nuggets: This item is taken from various parts of a chicken and may be purchased as all white, all dark, or a combination of the two. They may also be produced from meat which is chopped or comminuted and formed. Nuggets average about 0.6 ounces each with approximately 252 pieces per box weighing about 10 pounds, four to six boxes to the master carton. Nuggets may be purchased in random sizes at less cost.

Drumettes: This item is normally the first section of the wing, next to a bird's body. The first section joints contain approximately 120 to 140 pieces and the second section joints contain 175 to 225 pieces. Both are packed 12 pounds to the box.

Cooked Chicken is normally a fully cooked frozen product which can be tempered or thawed and eaten without heating. It may be breaded or unbreaded. Some items which are sold to heat and serve may not, however, be 100 percent fully cooked.

Unbreaded chicken such as splits and quarters may be factory cooked over hickory or mesquite coals and marinated with barbecue sauce. Breaded parts may be honey-dipped or actually injected with honey prior to breading and cooking. Each packer strives to produce a product which is unique in flavor and appearance (and sometimes in shape and portion size). Breading is a nominal 25 percent with a range of 24-28. Regulations limit breading to 30 percent by weight. An example of pack and size for a few products follows:

Item	Av. Wt. (oz.)	Case count
Drumsticks	3.00	100
Thighs (no back)	3.25	120
Breast Portion (no back)	3.25	120
Breast Halves (no back)	6.25	60
Drumsticks & thighs	3.00	100
4-Piece Portion	11-12	20
8-Piece Cut-up Chicken	---	12

Chicken Patties may be purchased raw, unbreaded, breaded ready to cook, or breaded and cooked ready to heat and serve. Patties are available in all white meat or a combination of white and dark meat.

This item is formed into oval, round, square, or "hoagie" shapes from ground and/or comminuted chicken. Also, VPP may be added. As with other items, patties have a nominal 25 percent breading and regulations limit the amount to 30 percent. Patties may be obtained in several sizes from 2 to 4 ounces each packed about 60 to a box, in layers.

Chicken Rolls are made from mechanically deboned meat which is flaked and diced, mixed with water, salt and phosphate and stuffed into fibrous casings. Gelatin may be added. Rolls are cooked to an internal temperature of 160°F, chilled, and frozen. The product is available with all white meat, all dark meat or a combination usually 60-40 white and dark meat. Each roll usually is 5 pounds and is packed 2 or 6 to the case. There are no grade standards for chicken rolls. These rolls provide the food service operator with a convenient labor saving method of making sandwiches. They may be used heated or unheated.

IQF Diced Chicken Meat is available in 1/4 inch, 1/2 inch, or 3/4 inch cubes, in all white, dark or a combination of white and dark meat. The cubes are packed in 5-pound poly bags, two bags to the case.

Storage and Care

Fresh: Use fresh chicken immediately, preferably within three days, and keep the product at the coldest cooler temperature available. If chicken is packed in ice and held at 28-32°F, the melting of the ice and the weepage of the "juice" from the meat will be minimal. Thus, the maximum flavor of the product is retained and bacterial growth (and spoilage) held in check.

Poly bags containing fresh chicken parts should be left open so that the product can "breathe". Keep the product well chilled in the same manner as iced chicken. Since fresh chicken parts have greater weepage than whole chicken, parts should be prepared and served within a few days after receipt.

Keep air circulation at a minimum to prevent dehydration. This applies to whole ice chicken parts as well as to poly-packed parts.

Chill pack chicken parts, i.e., parts which are crust frozen, should be held at or close to 28°F as possible, particularly if the product is to be stored for a few days. Minimize air circulation.

Frozen, Uncooked, Unbreaded: Store uncooked, unbreaded, frozen chicken parts in a refrigerator for about two to three days before using to permit the product to thaw so that it can be properly seasoned and/or breaded prior to cooking. The length of time depends on the temperature of the refrigerator (36°F is preferred) and whether the parts are bulk or layer packed. Frozen whole chickens and bulk-packed require longer to thaw because of their mass.

Frozen, uncooked chicken may be stored in a warehouse for a period of three to six months at 0 °F. Layer packed parts will not keep as long as bulk packed parts or whole chicken because of exposure of the parts to freezer burn. However, parts which have been glazed with ice prior to freezing will keep longer than unglazed parts.

The length of time for storing poultry, as with other frozen products, is relative. Chicken held at minus 5°F will keep longer than chicken held at plus 5°F. Also keeping time is affected by packaging. Items which are tightly packed in high density film keep longer than items which are loosely packaged in more permeable material.

What is meant by "keeping time"? Studies have shown conclusively that there is a time when the quality of chicken products will begin to slip. Loss of quality is due principally to the loss of moisture and the hardening of the surface of the chicken. Both of these are related to flavor and texture. The deterioration curve then progresses downward at a slow rate, depending on external factors such as temperature and packaging. (Quality deterioration is not necessarily related to product safety.)

Chicken meat which is off-flavor, or which becomes rancid probably had this characteristic before it was frozen. Which means that the chicken was improperly handled or overly "aged" prior to freezing.

When thawed and cooked, the bones of frozen chicken, and sometimes the meat around them, are a dark brown. This is not due to product deterioration, but to an enzymatic process which occurs when chickens are frozen.

Frozen, Uncooked, Breaded: Breaded chicken parts, pieces and patties can be cooked directly from the freezer, but always proceed in accord with the packer's instructions. If the product is thawed and then cooked, particularly in a deep fat fryer, the breading may lose its resiliency. The important consideration is to follow the packer's instructions because the breading may be intended for cooking in a specific way. For example, if the chicken is to be oven-cooked, make sure that the product is compatible with this method of cooking. Moreover, purchase products which are suitable to your chosen method of cooking.

Frozen, Cooked: Store unbreaded, frozen cooked chicken in the same manner as uncooked chicken, that is, the product should be held in a refrigerator before serving or heating and serving. It may be best, however, to heat frozen cooked breaded products directly from the freezer. As with all breaded products, make sure that you specify a product, which is suitable to your method of heating and follow the packer's instructions.

Both frozen uncooked breaded and cooked chicken have a shorter warehouse storage span than frozen chicken which is neither cooked nor breaded. This is attributable principally to the fact that cooked chicken has less moisture than uncooked chicken and the storage life for the breading on breaded chicken is shorter than for the meat itself.

Limit the warehouse storage cycle of frozen cooked chicken to three months maximum and if practical, keep inventory turns to about six weeks. Minimize air circulation so as to minimize freezer burn and loss of moisture from the meat.

Caution: Never use the same food preparation surface or utensils for cooked chicken that have been used for fresh chicken without cleaning and scalding. Fresh chicken may carry numerous bacteria whereas cooked chicken may be relatively sterile.

Turkey is no longer just a holiday or special occasion item; it is now a popular menu item practical for every day of the year. Gone are the days when turkey was considered a seasonal meat product with 90 percent of all turkey sold during November and December. Today almost two-thirds of the turkey crop is sold during the first 10 months of the year.

Whole Turkeys

When purchasing whole turkeys, one must consider class and grade. Class is based on age. Age affects the texture of the bird and dictates the cooking method for maximum flavor and tenderness. Young classes have more tender meat and are suitable for roasting, broiling, frying, and oven-baking. Young turkey may be labeled fryer-roaster, young hen, or young tom. Mature classes need simmering, braising or pressure cooking to make them tender and develop their full flavor. Mature turkeys may be labeled yearling or old turkey.

The quality and grade of whole and cut-up turkey is based on fleshing, fat covering, conformation and freedom from defects such as cuts, tears, discolorations and broken bones. When appearance is important, US Grade A, the highest grade, should be selected. When appearance is less important, (so what if a wing is missing) US Grade B and Procurement Grades I and II will provide savings without sacrificing good taste. Remember that the heavier the bird, the greater the percentage of meat in relation to bone.

Whole young tom turkeys weigh from 18 to 24 pounds and are usually packed 2 to the box. Hen turkeys average 8 to 12 pounds and are usually packed 4 to a box.

Further Processed Turkey Products

There are many new processed turkey products which food service operators are working into their menus. In fact, more than half of the turkey sold in the US are marketed in forms other than whole bodied turkeys.

The new cut-up turkey market includes turkey steaks, cutlets, drumsticks, wings and thighs. Turkey breasts is a market in itself. Breasts come in a variety of forms including partially boned, boneless, bone-in; oven-roasted, water cooked, smoked; skinless, or with natural skin; as slab roasts, sectioned and formed roasts or whole roasts; shaped rolls or ovals; all white or combination dark and white meat rolls. Many companies make over 15 to 20 different styles of turkey breasts alone. Products such as diced turkey cubes can save time and money in the kitchen and add delicious flavor to many dishes. Turkey is used in many recipes providing high protein with low fat content of turkey.

Boneless turkey breasts weigh from 7 to 14 pounds depending upon the type and style. The smaller breast are usually packed 4 to the case and the larger ones, 2 to the case.

Fresh: Turkeys are not generally available for the food service market, but arrangements can be made for supplies. Fresh whole turkeys and parts can be stored in a refrigerator for several days. The lower the temperature (32°-35°F) the better the environment. Store fresh whole turkeys in the boxes they came in and keep the boxes covered.

Frozen: Keep frozen turkeys and turkey parts in a refrigerator for several days prior to preparation. Whole turkeys require longer to defrost than turkey breasts, roasts or rolls; and these in turn require longer to defrost than smaller parts such as drums, thighs and wings.

Frozen whole turkeys, breasts, roasts and rolls are well suited for warehouse storage mainly because of their mass. Moreover, these items are tightly packaged in impervious shrink film. The product can be kept well beyond six months if held at 0°F or below. However, the storage life of cooked breasts and rolls may be somewhat less due to the lower moisture content in the product, particularly turkey breast and roast. Turkey rolls may have juices added which stabilize the storage life of the product. If spices are added to turkey rolls, the shelf life may be reduced due to the complexity and interaction of the spices.

Storage and Care

See the section on the storage and care of frozen chicken for more specific guidelines for storage and care of turkey products.

FOOD FACTS

IV - EGGS

Fresh Eggs

Plant Grade A and USDA Grade A eggs are judged by the same standards, therefore, when a supplier labels his eggs "Grade A" they must meet the USDA standards. However, when eggs are graded by personnel, the USDA grader may be more strict in his interpretations of the standards. A food service buyer could very well accept Plant Grade A if the price differential is significant and the buyer has confidence in the supplier's quality assurance program.

Small producer-packers often cannot afford full time USDA graders. This situation may be taken into account when specifying USDA grades, so as not to eliminate local suppliers who may be very competitive.

Other grades available include AA (mostly in California) and Grades B and C. Although the lower grades are just as wholesome, they rate lower in appearance when broken out. Almost no Grade B eggs find their way to the retail market. Most of them go instead to institutional egg users such as bakeries and food service operators. The remainder, along with the Grade C's, go to egg breakers for use in egg products.

Egg quality is determined principally by freshness -- which is indicated by a thick white, firm yolk, and a small air cell -- and by the cleanliness and soundness of the shell. The highest quality eggs, when broken out of the shell, will cover a small area, the white will be thick and stand up high, and the yolk will be firm and high. Thus Grade A eggs are most valuable for frying eggs and have less value for scrambling, boiling, poaching, baking, etc.

Shell color, i.e., brown or white, does not effect grade, quality or performance. Brown-shelled eggs are favored in the Northeast.

Size is important when considering portion size if the eggs are to be served individually. Egg sizes range from Peewee to Jumbo according to weights as follows:

<u>SIZE</u> <u>Description</u>	<u>MIN. WT./DOZ.</u> <u>(Ounces)</u>
Extra Large	27
Large	24
Medium	21
Small	18
Pee Wee	15

Prices

Unless eggs are to served individually by the portion, it may be more economical to purchase eggs by the pound, keeping in mind that more labor is required to break out 10 pounds of Peewee eggs than Large eggs, for example. The following table will help you compare the cost of various sizes of eggs by the pound.

To compare the price of large eggs to the price of medium eggs of the same grade, run your finger down the columns to the figures closest to the prices per dozen for large and medium eggs. Then go across to the price per pound for each size. The size selling for the lower price per pound is the best buy. Never compare the price of different grades of eggs.







EGG PRICES CALCULATED BY THE POUND

Small	Price Per Dozen		X-Large	Jumbo	Price per lb.
	Medium	Large			
\$.41	\$.48	\$.55	\$.62	\$.69	\$.36½
.45	.52½	.60	.67½	.75	.40
.49	.57	.65	.73	.81	.43
.52½	.61	.70	.79	.87½	.46½
.56	.65½	.75	.84	.94	.50
.60	.70	.80	.90	1.00	.53
.64	.74	.85	.95½	1.06	.56½
.67½	.79	.90	1.01	1.12½	.60
.71	.83	.95	1.07	1.19	.63
.75	.87½	1.00	1.12½	1.25	.66½

In the preceding table, the price per pound of medium and large eggs is equal at \$0.53 per pound when there is a 10 cents per pound differential (.70 and .80 cents). However, if large eggs are 85 cents per dozen, the per pound price is 56-1/2 cents which makes medium eggs the best buy for aggregate use at 53 cents per pound.

A Foodservice Guide To Shell Eggs

Egg Size

JUMBO	EXTRA LARGE	LARGE	MEDIUM	SMALL	PEE WEE
					
Minimum wt. per dozen					
30 oz.	27 oz.	24 oz.	21 oz.	18 oz.	15 oz.
Minimum wt. per 30 dozen case					
56 lbs.	50½ lbs.	45 lbs.	39½ lbs.	34 lbs.	28 lbs.

Egg Quality

	GRADE AA	GRADE A	GRADE B
Break Out Appearance	Covers a small area.	Covers a moderate area.	Covers a wide area.
Albumen Appearance	White is thick and stands high; chalaza prominent.	White is reasonably thick, stands fairly high, chalaza prominent.	Small amount of thick white; chalaza small or absent. Appears weak and watery.
Yolk Appearance	Yolk is firm, round and high.	Yolk is firm and stands fairly high.	Yolk is somewhat flattened and enlarged.
Shell Appearance	Approximates usual shape; generally clean,* unbroken; ridges/rough spots that do not affect the shell strength permitted.		Abnormal shape; some slight stained areas permitted; unbroken; pronounced ridges/thin spots permitted.
Usage	Ideal for any use, but are especially desirable for poaching, frying, and cooking in shell.		Good for scrambling, baking and use as an ingredient in other foods.

*An egg may be considered clean if it has only very small specks, stains or cage marks. Source: USDA

Egg Size Substitutions

JUMBO	X-LARGE	LARGE	MEDIUM	SMALL
1	1	1	1	1
2	2	2	2	3
5	5	6	7	8
9	10	12	13	15
18	21	24	27	28
37	44	50	56	62

Processed Eggs

Frozen Whole, Pasteurized, Mixed Eggs consist of whole eggs which are broken and the contents blended, homogenized and pasteurized. The mix is used for scrambling, preparing or making omelets, french toast or casseroles. Other variations include blended eggs which, in addition to whole eggs, contain egg whites, water, nonfat dry milk, oil, salt, etc. Eggs may also be purchased as plain yolks, plain whites, yolks with salt and sugar added or in various combinations for making sandwiches and omelets.

Whole pasteurized eggs are packed for kitchen use in "Purepak" cartons, 6 to a master case. Users of large quantities of eggs, i.e., bakers, may want to purchase eggs in 30-lb. tins.

Frozen, Cooked, Diced Eggs are hard cooked, chopped eggs prepared for use in salads. The prices of eggs are individually quick frozen and packed in polyethylene bags, four 5-lb. bags to the master carton.

Whole, Peeled Eggs are hard cooked eggs and packed in a preservative (not pickled). Whole peeled eggs are packed in 2 or 4 gallon plastic tubs with liners. There are approximately 175 eggs per 4-gallon tub with a net weight of 20 pounds.

Storage and Care

Fresh: Refrigeration slows the loss of fresh egg quality. A temperature of 45°-55°F is recommended for storage. Eggs stored at this temperature should experience insignificant grade quality losses for approximately five weeks. Eggs referred to as cold storage eggs are those that have been held under refrigeration for more than five weeks. If eggs are held at temperatures which are too low, i.e., below 35°F, they will "sweat" excessively when removed from storage thus increasing the chance for bacterial growth and quality deterioration.

Frozen: Store whole homogenized eggs and frozen cooked diced eggs at 0°F or below. If well packaged and sealed these products can be kept up to twelve months, however, it is recommended to use dried eggs within three months, otherwise dehydration may develop.

Chilled: Whole peeled eggs must be refrigerated and should be maintained at temperatures between 34° and 40°F. Whole peeled eggs cannot be frozen. The storage life of these eggs if held under the proper refrigeration is up to five weeks.

COOKING CHART**POULTRY**

Turkey.....	180-185
Boneless Roasts.....	170-175
Stuffing.....	165

Federal Inspection Mark for Poultry

Poultry

GROUP V - FISH PRODUCTS

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Fish Portions and Sticks

Frozen fish portions and sticks are cut from solid or minced blocks of Cod, Haddock, Whiting or Pollock fillets. The blocks may be formed from fillets with the skin either on or off. Fish portions are wider than fish sticks. Each portion is cut at least 3/8 inch thick and weighs at least 1-1/2 oz. Fish sticks are 3/8 inch thick and may weigh less than 1-1/2 oz. (usually 1 oz.). Fish portions and sticks are available in a variety of shapes and sizes. Almost every packer produces at least 15 to 20 styles of fish portions, all carrying the Grade A and CN label. They include:

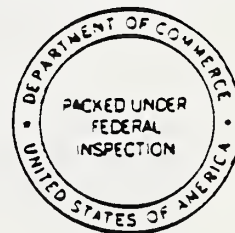
- cooked breaded 1-oz. sticks, 1.8 oz., 2.0, 2.7, 3.0, 3.6 and 4-oz. portions;
- a 4-oz. oven ready, batter style in wedges;
- rectangles and in hotdog (hoagie) styles;
- 2 to 4-oz. crispy or crunchy style wedges;
- raw breaded portions from 1 to 4-oz.

In addition, some processors make 1/2 oz. "fish bites".

Pack and Size. Packers in the fish industry are notoriously independent as far as the size of the individual boxes and the number of boxes per case, for example, 1 oz. cooked fish sticks are packed by one packer 12/3-lb.; another packs the same item 6/5-lb. Other pack sizes are 6/6-lb., 10/6-lb., and 10/7-lb., etc.

The U.S. Department of Commerce regulates the amount of breading used on fish portions and fish sticks by indicating the flesh requirements. The requirements for Grade A and those packed under federal inspection (PUFI) are indicated below.

	USDA GRADE A	PUFI	INSPECTION MARK
Raw Breaded Portions	75% Flesh	50% Flesh	<u>Fish and Seafood</u>
Cooked Breaded Portions	65% Flesh	50% Flesh	
Cooked Battered Portions	--	40% Flesh	
Raw Breaded Sticks	72% Flesh	50% Flesh	
Cooked Breaded Sticks	60% Flesh	50% Flesh	
Cooked Battered Sticks	--	40% Flesh	

Fish/Sea Patties

Fish patties are normally made from chopped or minced fin fish (Cod, Haddock, Whiting or Pollock). Whereas Sea patties (cakes) may be made of a mixture of fin fish with crabmeat, shrimp, clams or scallops. Patties or cakes are usually cut into round shapes to fit hamburger buns and are breaded and cooked prior to chilling and freezing. There are no minimum flesh requirements for fish or sea patties. A typical formula might call for 9-11% batter with 7 to 9 percent breading. Patties are available in sizes of 2, 2-1/2 and 3 ounces and are layer-packed in boxes and cartons of different sizes.

Fish and Cheese

Fish and Cheese consists of a slice of tangy process cheese placed on a cooked portion of cod, pollock or whiting. The cheese and fish portion is battered, breaded and lightly fried. CN labeled fish and cheese contains 0.9 oz. of cheese and 1.1 oz. of fish (the remainder is batter and/or breading) and may provide a contribution of 2.0 oz. of meat/meat alternate to the meal pattern (Type A)¹ requirements. Some products are made with an enriched flour breading which meets the reimbursable meal pattern requirements for 1 ounce bread/equivalent.

Fish and cheese is available in portion sizes of 3.5 to 4.0 oz. and in many different styles: double battered, crisp breading, crunch style enriched white flour breading, batter fried crunchy portions, to name a few. Fish and cheese is cooked so that the frozen product only needs heating in conventional or convection oven for 10 to 14 minutes. Over heating causes the cheese to melt and run.

As with other fish products, no two packers seem to agree on the proper number of portions per box or boxes per case. Fish and cheese carries a CN label and is a National Commodity Contract item which qualifies for a rebate or refund.

Catfish Strips and Nuggets

A catfish strip is a smaller piece of raw fish cut crosswise of the fish fillet (the boned sides of fish cut lengthwise away from the backbone). A catfish nugget is the lower, forward section of the fillet. (See sketch) This part is usually removed from ocean fish because it has a stronger flavor, but when cut from farm raised catfish, the nugget has a pleasingly mild taste. Although strips and nuggets are only available in the uncooked form, several packers have plans for cooking the product. Regular (unbreaded) and breaded nuggets and strips are available as follows:

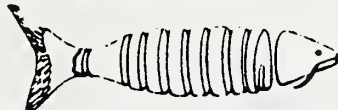
	<u>NUGGETS</u>		<u>STRIPS</u>	
	<u>Regular</u>	<u>Breaded</u>	<u>Regular</u>	<u>Breaded</u>
Size (oz.)	1-3	1-3	.75-2.25	1.0-2.75
Length (in.)	2-4	2-4	4-5	4-5
Portions/Case	97-195	120-240	150-260	120-240
Case Wt.	15 lb.	2/5 lb.	15 lb.	2/5 lb.

Nuggets and strips are packed 10 lbs. to the carton and wholesale units contain 6 cartons. These items are sold by the pound.

1. The term "Type A" has been discontinued.

CATFISH ARE AVAILABLE IN A VARIETY OF CUTS AND FORMS¹

Dressed Catfish



Steaks are cross-section cuts



Filletts are boned sides of fish



Strips are smaller pieces of fish cut from the filletts

Breaded Shrimp

This product is available in round or butterfly (split) styles. Counts per pound unbreaded are as follows: under 10, 10-15, 16-20, 21-25, 26-30, 31-35, 36-42, 43-50, 51-60, 61-70, or 70 and over.

Breaded shrimp may have a maximum of 50% breading and may be obtained "lightly breaded", in which case the shrimp may have only 35% breading. Breaded shrimp are layer packed 3 lbs. to the box, 12 boxes to the master carton.

1. Farm Raised Grainfed Catfish.

MINIMUM PERCENT FLESH REQUIRED ON BREADED FISHERY PRODUCTS WHICH ARE GRADED OR INSPECTED BY THE U.S. DEPARTMENT OF COMMERCE (USDC).

Product	USDC Grade A	PUFI ¹
<u>Fish Fillets</u>		
Raw Breaded Fillets	--- ²	50%
Precooked Breaded Fillets	---	50%
Precooked Crispy/Crunchy Fillets	---	50%
Precooked Battered Fish Fillets	---	40%
<u>Fish Portions</u>		
Raw Breaded Fish Portions	75%	50%
Precooked Breaded Fish Portions	65%	50%
Precooked Battered Fish Portions	---	40%
<u>Fish Sticks</u>		
Raw Breaded Fish Sticks	72%	50%
Precooked Breaded Fish Sticks	60%	50%
Precooked Battered Fish Sticks	---	40%
<u>Scallops</u>		
Raw Breaded Scallops	50%	50%
Precooked Breaded Scallops	50%	50%
Precooked Crispy/Crunchy Scallops	---	50%
Precooked Battered Scallops	---	40%
<u>SHRIMP</u>		
Lightly Breaded Shrimp ³	65%	65%
Raw Breaded Shrimp ³	50%	50%
Precooked Crispy/Crunchy Shrimp	---	50%
Precooked Battered Shrimp ⁴	---	40%
Imitation Breaded Shrimp ⁴	---	No minimum. Encouraged to put % on label.
<u>Oysters</u>		
Raw Breaded Oysters ⁵	---	50%
Precooked Breaded Oysters ⁵	---	50%
Precooked Crispy/Crunchy Oyster ⁵	---	50%
Precooked Battered Oysters ⁵	---	40%
<u>Miscellaneous</u>		
Fish and Seafood Cakes	---	35%
Extruded and Breaded Products	---	35%

1 PUFI - Packed Under Federal Inspection (and not graded).

2 "----" means no USDA grading standard currently exists.

3 FDA standards of identity require a minimum of 50% shrimp flesh by weight and if labeled "lightly breaded" must contain not less than 65% shrimp flesh.

4 Any product with a standard of identity which contains less flesh than the standard calls for, must be labeled "imitation".

5 Flesh content on oyster products can only be determined on input weight basis during production.

GROUP VI - DAIRY PRODUCTS

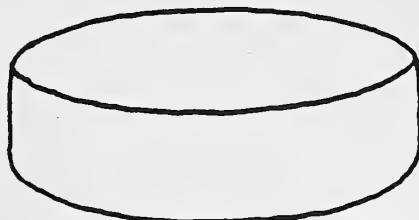
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NATURAL CHEESES: SHAPES AND SIZES

WHEELS/HOOPS/ROUNDS



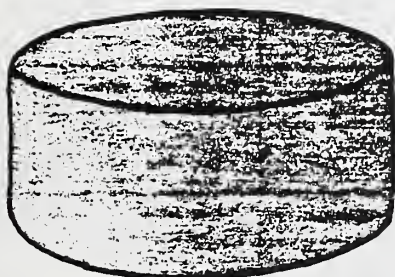
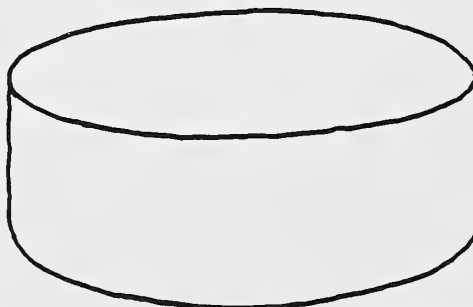
Midget - 12 Lb.



Daisy (Daisie) - 22 Lb.



Flat - 37 Lb.

Cheddar
70 Lb.Mammoth
100 Lb. and Over

HORNS AND LONGHORNS

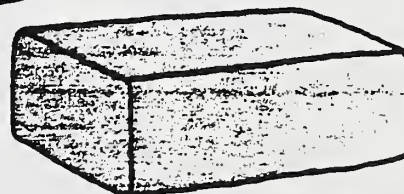


10 Lb.

Four horns in case often referred to as hoop.

12 Oz., 1 Lb.,
1½ Lb., 2 Lb.

BALL - 2-10 Lb.



BLOCK - 40 Lb.



BAR - 10 Lb.

NATURAL CHEESE SHAPES DEFINED

BALL globe-shaped cheese, such as Edam.

BAR (also known as loaf) large rectangular shape, wider than it is high; 10 pounds.

BLOCK 40-lb. rectangular cheese form; also a generic term for all rectangular cheeses.

CHEDDAR ... refers not only to the generic cheese type, but also to a special size wheel, about 14 inches in diameter and weighing from 70 to 75 lbs.

DAISY a 22-pound wheel of cheese; sometimes (Daisie) known as a *hoop*. (Split daisy...one which has been split horizontally.)

FLAT a 37-pound wheel of cheese.

HOOP same as wheel.

Courtesy Kraft, Inc.

HORN cylinder-shaped cheese, taller than it is wide. (Split horn...a cylinder cut vertically.)

LONGHORN .(same as horn).

MAMMOTH .wheel of cheese weighing 100 lbs. or more.

MIDGET refers either to miniature wheels or to miniature horns.

ROUND (same as a wheel).

WHEEL varying in size, a reasonably flat and round (Cartwheel) disc of cheese. Includes midget wheels, midgets, daisies, flats, cheddars and mammoths.

YOUNG

AMERICAN .(refers specifically to cheddar cheeses) a type of horn cheese; may also be a split horn.

Cheese has been one of man's most nutritious foods for thousands of years. Most cheese is made from cows' milk although the milk of sheep, goats, camels, buffaloes and reindeer is used in many countries. The milk of several species of animals may be mixed to produce various flavors and textures of cheese.

The United States, France and Italy rank as the leading cheese-producing countries in the world. Wisconsin leads the U.S. in cheese production followed by New York, Missouri, Illinois, Minnesota, Tennessee and Indiana. Cheese consumption in the United States averages approximately 10 pounds per person per year.

A major milestone in the cheese industry was in 1917 when the first process cheese was made in the U.S. It is made by pulverizing, blending and heating one or more varieties of natural cheese with an emulsifier and adding optional ingredients and pasteurizing. The moisture content in most pasteurized process cheeses cannot exceed 43 percent and the fat content must be at least 47 percent.

Pasteurized process cheese has become popular throughout the world because of its uniform flavor, keeping qualities and because it melts so smoothly when used in cooking. Approximately half the cheese sold in the U.S. today is process cheese.

Pasteurized process cheese is labeled according to the variety of cheese used, for example, if it is made from swiss cheese, it is called pasteurized process swiss cheese. If it is made from two or more varieties, it is called pasteurized process _____ and _____ cheese with the blanks being filled in with the names of the varieties of cheese used in the order of predominance by weight.

American

To be designated "American Cheese", pasteurized process cheese must be made of cheddar cheese, washed curd cheese, colby cheese or granular cheese or any mixture of two or more of these; or the above cheeses may be combined with other varieties of cheese.

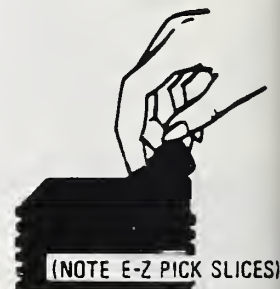
Pasteurized process American cheese as well as other pasteurized process cheeses such as swiss cheese and cheese food are all available in 5 lb.. loaves, packed 4 to the master case. The product can be purchased whole or sliced. Slices are available either ribbon style or cross-cut style.

Ribbon Slices can be sliced in various combinations as follows:

No. of Ribbon Slices Per Loaf	No. of Cross Cuts	Yield Slices Per Loaf/Case		Weight of Each Slice	Dimensions of Each Slice
32	3	94	384	.83	3-3/8" x 3-3/8"
32	4	128	512	.63	3-3/8" x 2-1/2"
40	4	160	640	.50	3-1/32" x 3"
40	5	200	800	.40	3-1/32" x 2-3/8"

Sliced cheese is packed in staggered layers and sprayed with lecithin to facilitate the separating of slices. It is sliced in various sizes from 0.375 oz.. per slice to 0.83 oz.. per slice as shown below.

Slices per 5-lb. Loaf	Weight per Slice	Number Stacks	Slices per Stack
96	.86	3	32
120	.66	4	40
160	.50	4	40
184	.44	4	46
200	.40	4	50
250	.37½	5	50



Federal Inspection Mark for CN Labeled Meat Alternate Products
(eggs, cheese, beans, peanut butter)

Inspected By The
U.S. Department of Agriculture
In Accordance With
FNS Requirements

Swiss

As mentioned previously, swiss cheese is made the same as other processed cheeses. Swiss cheese is packed the same way as pasteurized process American, i.e., 4/5-lb. loaves, sliced in 96, 120, 160, 184, 200 and 250 slices per 5-lb. loaf and in 32 and 40 ribbon slices.

Cheese Food

Pasteurized process cheese food is prepared in the same way as pasteurized process cheese except for the moisture and fat content. The moisture content of cheese food can be no more than 44 percent and the fat content not less than 23 percent. Two ounces of cheese food and cheese spread only counts as one ounce of meat alternate in the CN program. There are no CN-labeled cheese foods or cheese spreads. Cheese food is packed the same as American cheese.

Cheese Spread

Pasteurized process cheese spread is the same as pasteurized process cheese except that the moisture content is more than 44 percent but no more than 60 percent and the fat is not less than 20 percent and no emulsifier can be used.

Cheese spread is packed in 5-lb. pails, 4 to a master case.

Imitation Cheese

Imitation pasteurized process cheese is a blend of vegetable oils and protein especially formulated for a cheese substitute. To be called imitation American it must contain 15% pasteurized process American cheese.

All imitation cheeses that are going to be used to meet meal pattern requirements as established by the Food and Nutrition Service must be approved by FNS. All approved products are listed on an approval list.

It is available sliced, either 120 or 160 slices per 5-lb. loaf, 4 per case or in 4/5-lb. loaves.

Cold-Pack and Club

Cold-pack cheese and club cheese is prepared by comminuting one or more varieties of cheese of the same or two or more varieties into a homogenous plastic mass without the aid of heat. Certain cheeses such as cream cheese and cottage cheese, hard grating cheese, semisoft part skim cheese, etc. may not be used. All cheeses used in cold-pack cheese are made from pasteurized milk or from cheese held for not less than 60 days at a temperature of not less than 35°F before being comminuted. The cheese may be labeled Cold-pack cheddar (if cheddar is the variety the product is made from) and wine (if wine is used as flavoring) cheese. The moisture and fat content of cold-pack cheese is dependent upon the variety of cheese used in its preparation.

Cold-pack cheese is packed in one pound plastic tubs, 12 to the case or in crocks of 2-1/2 to 5 pounds.

Cheese Nuggets

Cheese nuggets can add variety to the menu, particularly for what seems to be a growing appetite for finger foods. Several types of nuggets can be used as an appetizer, snack, entree or change-of-pace side dish. Some of the cheese nuggets on the market include breaded process, cheddar wedges, breaded process swiss sticks, breaded mozzarella sticks, breaded nacho sticks and breaded process cheese and onion cubes.

These products are packed 8 pounds per case (2/4 lb. poly bags). The pack for individual sticks ranges from 16 to 64 sticks per pound.

Cheese makers classify all varieties of natural cheese according to texture and flavor. Each is divided into three categories: Texture - soft, medium and hard; and Flavor - milk, medium and sharp. Natural cheese is made by adding starter culture (bacteriological) to fluid milk.¹ The entire mixture is heated to form curds and the liquid residue (whey) is drained off. The curd is pressed into a solid mass under pressure in a mold.

Blue

Blue cheese is a domestic cheese similar in flavor and texture to Roquefort which is imported from France. Blue cheese is made from cows' milk while Roquefort is made from sheeps' milk. The ripening period is a minimum of 2 months but usually 3 to 4 months and 9 months for a pronounced flavor. It is semisoft cheese with visible veins of mold and has a pasty texture and is sometimes crumbly. Blue cheese has a piquant, spicy flavor, is white in color marbled with blue green mold. It is used in salads and salad dressing, in dips, on tray assortments, with fruits and for dessert. Blue cheese is packed 4/6-lb. blocks or in crumbles for dressings in 3/5-lb. poly bags.

Brick

Brick cheese is ripened for two weeks or longer. It gets its name from the brick shaped molds used to press the curd together. Brick cheese has a semisoft consistency and has a smooth waxy body. The flavor is mild to sharp and the color is light to light yellow. It is used in sandwiches, on appetizer trays, with crackers or for dessert. Brick cheese is packed 6/5-1/4-lb. to the master carton.

Brie

Brie is a soft cheese with a rich mellow flavor. It has a white rind and is ripened for approximately four weeks and is packed 12/4.5 oz. per carton (or box) and 4 cartons per case or in single service packages with 6 triangular shaped pieces, 4 dozen boxes per case.

Camembert

Camembert is another soft cheese with a rich mellow flavor. The ripening period is from 7 to 12 days although it will continue to ripen after shipment. It has a thin natural rind with white rind flora. It is packed in flat discs, 1/2 to 1-1/2 pounds each.

1. Made from whole cows milk unless indicated otherwise.

Cheddar

Cheddar cheese is probably the most popular natural cheese. It has a ripening period of from 2 to 12 months. Cheddar cheese is a hard cheese with a smooth firm body. The flavor is from mild to extra sharp depending on the length of time it is aged. Cheddar is light yellow to orange in color and is available in various shapes and styles, rind or rindless. Cheddar is a favorite as an appetizer, with crackers, on pie, in sandwiches, in cooked foods and in salads. Cheddar cheese is packed as rindless, long horns, 4/14-lb.; Daisies, 22-lb. variable weight; and Bars 4/10-lb. and 70-lb. wheels.

Colby

Colby cheese is ripened approximately 1 to 3 months. Colby is a hard cheese but softer and more open in texture than cheddar. It has a mild flavor and is light yellow to orange in color. Colby is used as a appetizer, in cooked foods and in salads. Colby is packed in rindless horns 2/8.75-lb. per box and 2 per case; 4/10-lb. bars and 4/12-lb. variable weight longhorns.

Edam

Edam cheese is made from partly skimmed cows' milk. The ripening period is 2 months or longer. It is a hard cheese, with a mealy body, more open and softer than cheddar. It has a mild, nutlike flavor and is creamy yellow in color with a red wax coat. The shape is that of a cannonball. Edam is used as an appetizer, a colorful base for cheese trays, in salads, in cooked foods and in sandwiches. Edam cheese is packed in wax round "cannon balls" averaging 1-lb. and up each (variable weight).

Gouda

Gouda cheese is also made from partly skimmed cows' milk, but has more milk fat than Edam. Its consistency and texture is very much like Edam as is its flavor, mild and nutlike. The color is creamy yellow with or without a red wax coat and the shape is round and flat. The ripening period is 2-6 months. Gouda cheese is used in the same manner as Edam, i.e., as an appetizer, as a cheese tray item, or as an ingredient in cooked foods and sandwiches. Gouda cheese is packed as baby gouda, 12/8-oz.; Jumbo, 1/10-lb. bar, 1/40-lb. rounds.

Gruyere

Gruyere cheese is made from partly skimmed cows' milk and the ripening period is at least 3 months. Gruyere has a nutlike, sweetish taste and is light yellow in color. It is a hard cheese with tiny gas holes or eyes and is found in the shape of flat wheels. It is used as a dessert or after dinner nibbler.

Limburger

Limburger cheese is a robust, highly aromatic cheese, creamy white in color and rectangular in shape. It is made from whole or partly skimmed cows' milk and is soft, smooth and has a waxy body. Its ripening period is 1-2 months. It is used for a snack on crackers or in sandwiches. Limburger cheese is available in 7-oz. packages, packed 12 to the case.

Monterey Jack

Monterey Jack cheese must ripen 2-6 weeks for table use and 6-9 months for grating. It is a mild, creamy white cheese, semisoft with a smooth open texture. It is in the shape of a wheel. It is used for sandwiches, as an appetizer, in cooked foods and salads. Monterey Jack is packed 4/10-lb. bricks or blocks per master carton.

Mozzarella (Pizza)

Mozzarella or pizza cheese is made from whole or partly skimmed cows' milk. It has a mild, delicate flavor and is creamy white in color and shaped in a rectangle or sphere. It is available as low moisture or part-skim mozzarella or both. It is a semisoft cheese and used in other cooked dishes as well as pizza. Mozzarella is packed in 6 pound blocks wrapped in polyethylene and packed 8 to the case.

Muenster

Muenster cheese is a mild to mellow, semisoft cheese. It has a smooth, waxy body and a yellow, tan or white surface, creamy white interior and is in the shape of small wheels or blocks. Muenster has a ripening period of 2-8 weeks. It is used in sandwiches and is great on an appetizer tray or for dessert. Muenster is available in 5-1/4-lb. blocks packed 6 to the case.

Neufchatel

Neufchatel cheese is a mild cheese, a white, soft, smooth and creamy color and is wrapped in foil in rectangular shapes in portions. It is used in sandwiches, in dips and in salads. Neufchatel is available in portion size 25/3 oz. packages per box or in 6/3-lb. loaves.

Parmesan (Reggiano)

Parmesan or reggiano cheese is made from partly skimmed cows' milk. It has a ripening period of 14 months minimum to 24 months or longer. Parmesan cheese is brittle and granular and is found in light yellow, brown or black coated cylinders. It has a nutlike, sweet flavor and is served and used grated as a seasoning in cooked foods. Parmesan cheese is available in 12/1-lb. tubs and 4/5-lb. tubs and poly bags.

Provolone

Provolone cheese is aged from 2 to 12 months. It is a hard, compact, flaky cheese, light golden yellow to golden brown in color, with a shiny surface bound with cord. Provolone comes in the shape of a pear, sausage or salami. The flavor is mild to sharp and piquant, usually smoked. It is a favorite snack cheese and is also used in cooked dishes or for dessert. Provolone cheese is packed 6/12-lb. variable weight pear shape or wedge.

Romano

Romano cheese is a hard grating, sharp, peppery cheese with a dark exterior and white round interior. It has a ripening period of 5 months. It is usually served grated or used in cooked dishes. Romano is packed in 5-lb. poly bags.

Roquefort

Roquefort cheese is made from sheeps' milk and has a ripening period of 2 months minimum to 6 months or longer. It is a soft cheese with a sharp, spicy, piquant flavor very similar to blue cheese. It has visible veins of mold running throughout and the consistency is pasty and sometimes crumbly. The color is white marbled with blue-green mold and the shape is cylindrical. It is used for dessert, in salads and on crackers. Roquefort cheese is produced in the Roquefort region of France only.

Swiss, Domestic and Imported

Swiss cheese is made from partly skimmed cows' milk and has a ripening period from 2 months to 9 months or longer. It is a hard, smooth cheese with large gas holes or eyes and is found in rindless blocks and large wheels with rind. Swiss cheese has a sweet, nutlike flavor and is used in sandwiches and salads. Domestic swiss cheese is available in 12-and 15- pound rindless blocks and large 30-pound wheels with rind. Imported swiss is packed 2/8-9-lb. variable weight wheels per case.

Storage and Care

Most hard cheese has a long storage life under chilled conditions (32-35°F) and will therefore keep well in a food service cooler. Some soft and semi-soft cheeses, however, have a much shorter shelf life and may require freezer storage if the product is to be held for prolonged periods. See the table which follows.

Cheese is more susceptible to mold if not held at adequate temperatures, properly packaged or coated or if the storage room has a high mold content. Mold build up might occur if the humidity is too high or if the product is stored with other mold prone products. For best results, keep the humidity between 65 and 70 percent. If mold persists, a charcoal air filter of appropriate size may be used to filter at least some of the mold.

Recommended storage periods for selected cheeses are as follows:

Item	Average Freezing Point	Chilled Months
Blue, Veined Natural	(F)	6
Cheddar, Natural	25*	18
Mozzarella, Natural	(F)	1
Process American		
Piemento or Swiss		
Loaf	25*	18
Sliced	25*	12
Parmesan, Natural	(F)	12
Pizza Blend	(F)	6
Provolone, Natural	(F)	18
Romano, Natural	(F)	18
Swiss, Natural	25*	18

(F) - Can be frozen

*Cannot be frozen without adverse affects

(These cheeses may crumble when frozen and thus not slice well.)

FOOD FACTS

MILK PRODUCTS

Usually it is not necessary to write specifications for milk and ice cream, except to indicate that purchases are being made in accord with minimum state standards and to identify the product desired and contents properly, as may be applicable.

Milk

Although most states require that whole milk contain 3.25 percent milkfat, averages usually range somewhat higher (3.5). Most milk must be pasteurized, homogenized and have Vitamin D added. If other vitamins are added, the milk is labeled "Vitamin Fortified", or the vitamins are simply stated, i.e., A, D, etc. The term "standardized" is also used sometimes, which means that raw milk is blended and adjusted for fat content. (This is a standard procedure in milk processing.)

Cultured Buttermilk

Cultured buttermilk is produced by adding specific bacteria to skim milk or lowfat milk. Cream, small butter granules and salt may also be added. Most buttermilk contains from 1 to 2 percent milkfat (nominal 1.5 percent).

Yogurt

Yogurt is also a product which is cultured by the use of specific bacteria. This product is available in liquid or semi-solid form and may be flavored by adding fruit.

Skim milk and Lowfat Milk

If a milk "beverage" is labeled "nonfat" or "skim milk", it usually contains less than 0.5 percent milkfat. Lowfat milk contains between 1.5 and 2 percent milkfat. If nonfat dry milk is reconstituted and blended with fresh, lowfat or skim milk, the word "reconstituted" is added. Also, the term "fortified" or "milk solids added" is placed on the label.

Chocolate Milk

If chocolate (or other flavor) is added to whole milk, the product is labeled "chocolate (or other flavor) milk". If added skim milk or lowfat milk, the product is labeled "chocolate (or other flavor) drink or beverage".

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1. Some states allow the sale of "raw" milk.

Cream

Products which are labeled "light cream" or "coffee cream" must be at least 18 percent milkfat. Whipping cream must be at least 30 percent milkfat. Half and half (cream) must be 10.5 percent milkfat. Milk solids are often added to "coffee creams" to enhance the color and consistency. Whipping creams vary in consistency in accord with the purpose intended. To produce normal whipped cream topping, purchase either whipping cream or heavy cream. For greater consistency, purchase extra heavy cream.

Milk Shake Mix

Some food service operators have equipment for freezing and dispensing soft-serve milk shakes (or ice cream). Milk shake mixes are added to fluid milk (or water) at the time of production in cafeterias. Mixes can be purchased with flavors, or flavors can be added (or increased) at the time of kitchen preparation.

Cottage Cheese

Cottage cheese comes in "small curd" or "large curd" and "creamy" (or creamed). Small curd cottage cheese has particles about one-eighth to one-fourth inch in diameter. Large curd cottage cheese has particles up to one-half inch. When a cream dressing and salt are added to the dried curd particles, it is referred to as "creamed" cottage cheese. Cottage cheese for food service is packed in rigid containers holding up to 30 pounds.

The quality of ice cream is related to density (weight per gallon) and the quantity and quality of ingredients. Although the percentage of milkfat is important, it is not necessarily the deciding factor. However, from the standpoint of milkfat content, there are three quality ranges: Average 10 percent, 12 percent and 15 percent. As the fat content and flavoring are increased, the weight per gallon is increased.

Variations. In addition to dairy products, ice cream usually includes sweetening and flavoring products, stabilizers and emulsifiers, or fruits may also be added. Fancy (French style) ice cream usually contains eggs and may have a deep, rich color.

Specifications. Ice cream should be purchased in accord with the minimum standards as authorized by State regulations. Unless a higher quality is desired, it is unnecessary to specify percent milkfat, weight content per gallon or quality of flavoring. For example, vanilla ice cream can be specified as vanilla, vanilla flavored, artificially flavored vanilla, or artificial vanilla. Fruit can be specified in a similar manner.

Ice creams are available in many different flavors and degrees of richness. Ice cream usually contains non-fat solids, sugar, flavoring, fruits or nuts, coloring and stabilizers such as gelatin or vegetable gums and frequently eggs.

FOOD FACTS

ICE CREAM PRODUCTS

Frozen custard has the same content as ice cream but with eggs added. It is cooked to a custard before freezing. Parfait is ice cream with a high fat content and with various ingredients such as nuts, fruit or liquers added. Parfait is less solid than ice cream and is often served in chilled glasses.

French ice cream has a high fat content and enough eggs to give it a distinct yellow color. It may contain small bits of vanilla beans, or nuts and fruits. Bisque is ice cream with cake, such as macaroons added. Ice milk is not technically an ice cream. It is made with some whole milk and has a butter fat content of 4 to 6 percent. Sherbert is a frozen food made of fruit juices, stabilizers, sugar and some milk with a butter fat content of 1 to 2 percent. Water ices are similar to sherbert in appearance except they contain no dairy products.

Most food service operators purchase ice cream and other frozen dairy products in bulk and serve them by the scoop. Others purchase them in portion sizes ready to serve. Ice cream is also served in prepackaged cups or in other packaged forms.

The quality of ice cream and other frozen dairy products is related to the quality of the ingredients, the weight per gallon and the quantity and quality of the flavoring materials. High quality ice cream has a high fat content, often as much as 15 percent. They are also well flavored and contain only a small amount of air (over-run).

Ice cream flavorings may be natural or artificial or the two may be used together. If artificial flavoring predominates or is used entirely, the product should be so labeled as "Flavored Ice Cream". If the natural flavor dominates or is used entirely, the term "flavored" need not be used.

Nearly all food service establishments that sell ice creams purchase them ready to serve or dip and serve. Some establishments, however, have facilities for freezing their own ice creams, in which case they purchase ice cream mixes. These mixes often produce soft products which are used as ingredients in "direct draw" milk shakes. The mixes are either pre-flavored or the flavoring can be added at the time of the mix.

Ice cream should be served slightly soft rather than brick hard. Ice cream which is too hard is difficult to dip as well as eat. The dipping of ice cream can be simplified and the softening process speeded up if the scoop is held in warm water between uses.

Storage and Care

Milk. The shelf life of milk can be measured almost in terms of "hours" if held above 45°F. Besides, serving milk at this temperature is not conducive to good patron acceptance. Make sure that milk held overnight, or over a weekend, is held well below 38°F. Any milk received above 40°F should be brought down in temperature immediately.

Ice Cream

Most ice cream can be held at zero or even plus 5°F prior to serving. However, ice cream held more than one day, or over a weekend, should be kept as cold as possible, preferably at or below -10°F.

Butter

The majority of butter is produced in the mid-western part of the United States and shipped to the various centers of population. It is usually handled by jobbers or purveyors dealing with food service establishments. Many dairies supplying fluid milk or cream also distribute butter. Butter is one of the few dairy products that may be graded. Not all butter is graded, but it is to the advantage of the manufacturer to do so. The grade placed on butter is established by USDA graders who sample the product and determine the overall quality of the butter. Major emphasis is placed on the flavor and odor of the butter with minor emphasis on body and texture, salt distribution and uniformity of color.

The grade designations for butter are AA, A, B, and C. These correspond to numerical scores of 93, 92, 90 and 89. The purchasing agent for a food service establishment should know butter grades and make use of them in purchasing specifications. For the best quality butter, purchasing agents should specify AA butter. AA butter will possess a delicate pleasing flavor and excellent workmanship. Market quotations frequently include butter grade designations in conjunction with the quoted price.

Butter is available to the food service establishments in the form of "patties", "prints" or "tubs". The "patties" or "chips" refer to individual servings of butter which may vary from about 48 to 96 per pound, according to the size of the serving. Purchasers of butter should specify the number of patties per pound desired when ordering butter in this form. "Prints" refer to the packaging of butter in one-quarter pound or one pound quantities which are individually wrapped for quality protection. "Tubs" or bulk butter refers to the large size unit of approximately 40 to 64 pounds. The selection of size of package of butter should be to meet the needs of the food service establishment.

Another form of butter which is available is a product known as "whipped butter". This product, as the name indicates, has been expanded in volume by the incorporation of air. The finished product is characterized by its softer consistency and improved spreadability at any given temperature compared to normal butter. It is normally packaged in 6 or 8 prints per pound or in tub quantities.

Butter can be stored for about one month when well packaged and held at 32°F and low relative humidity (55 percent). Butter can be held longer by freezing it.

Margarine

Margarine (or oleomargarine), a butter substitute, is made by blending vegetable oils and/or animal fats with skim milk or water, flavoring, color, vitamins and other substances. Margarine is manufactured to closely resemble butter in appearance, "melt" and flavor. It is marketed in approximately the same forms as butter and is available in soft types as well as firm.

Margarine, like butter, is available in various qualities, depending on the quality of the ingredient and the manner in which the product is processed.

Margarine can be stored for about two months if well packaged and held at 32°F and a relative humidity of 55 percent.

Cream Substitutes

Just as margarine is a suitable substitute for butter, there are also suitable substitutes for dairy creams. These products are manufactured mostly from vegetable oils. Substitutes for coffee cream are called coffee whiteners or similar names and are packaged in the same manner as the dairy products. Coffee whitener can be purchased frozen as well as chilled. Substitutes for dairy whipping creams are called "whip topping" and are purchased frozen, ready to thaw and dispense. These products are available in aerosol cans as well as conventional packages.

GROUP VII - ETHNIC FOODS

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FROZEN PASTA DISHES

Many pasta or Italian dishes are available frozen from several manufacturers in various forms. Some packers prepare the product in 1/2 steam table pans, ready to heat in the oven. The pans have about 12 portioned servings per pan and 6 pans per case. Other packers prepare portioned servings in a tray or box with 4 to 6 boxes per case. These products are available with a CN label. Some dishes have tangy sauces poured over the pasta for additional flavor.

Lasagna

Lasagna is made with Ricotta cheese piled high between layers of pasta. It is available with meat sauce, plain Italian sauce, or without sauce. Sauce is an expected ingredient of lasagna products and its declaration in the product name is optional. Examples of the USDA meat requirement for various products are as follows:

<u>Product</u>	<u>% Meat</u>
Lasagna with Meat and Sauce	12% fresh meat
Lasagna with Meat Sauce	6% fresh meat in total product
Lasagna with Poultry	8% poultry meat
Lasagna with Tomato Sauce, Cheese and Pepperoni	8% pepperoni
Cheese Lasagna with Meat	12% fresh meat.

Lasagna is available frozen in steam table pans for serving 6 or 8 oz. portions or in 6-oz. individually wrapped portions.

Ravioli

Ravioli is made with Ricotta cheese or a combinations of cheese and fine textured (or ground) beef in a pasta covering. Requirements for meat in ravioli are similar to lasagna, 12 percent for meat ravioli, 6% for meat sauce. In addition to the traditional squares, ravioli is available in round or halfmoon shapes. Unit sizes range from 1/2 oz. to 1.5 oz. from 4/48 count for 1.3 oz. to 4/128 for 1/2 oz. size.

Cannelloni

Cannelloni is another pasta dish of ground beef and Ricotta cheese, similar to ravioli. Meat cannelloni must contain 12 percent meat by government regulation; chicken cannelloni must have at least 7 percent poultry meat.

Cannelloni is available frozen in 2.7-oz. sizes; 4/24 count per case and the suggested serving unit is two.

Manicotti

Manicotti is an enriched noodle pasta filled with Ricotta cheese with special seasonings. It is available frozen 4/48 count of 2.7 oz. each. Two units (5.4 ounces) are suggested for each serving.

Stuffed Shells

Stuffed shells are made with Ricotta cheese or a combination of cheese and ground beef. It is available in 2-oz. sizes, packed 4/32 count per case. Three units (6 ounces) are suggested for each serving.

Macaroni and Cheese

Macaroni and Cheese, an all time favorite, is available in 1/2 steam table pans. Each pan provides 13-1/2 servings and is packed 6 to the case or a total of 81/5-1/3 oz. servings per case.

MEXICAN FOODS¹

Mexican dishes are gaining in popularity throughout the country. Listed below are explanations of some of the terms in Mexican cooking. Many of these products are available frozen, but many food service operators still prefer to obtain the basic tortilla, taco shell, nachos, etc. and prepare their own.

Various sauces are available to enhance the flavor of these products. These include enchilada, taco, avocado, or green chili salsa sauce. Sour cream is frequently used as a topping for certain Mexican dishes.

Tortilla (F) (F) - Frozen; (CH) - Chilled; (D) - Dry; (C) - Canned

Tortilla is the basis of Mexican food. Almost every Mexican dish includes either a corn or flour tortilla. It is the same as bread in Mexican cooking. Actually, the tortilla is a thin pancake, made of corn but sometimes flour and singed through a hot flame. Corn tortillas are available frozen in various sizes from 5 to 7 inches in diameter and packed 90 dozen per case. Flour tortillas are available frozen 6 to 10 inches in diameter and packed 12 or 24 dozen per case.

Taco Shells (D)

Taco shells are made from a corn tortilla by curving it in half and deep frying until crisp. A Taco, or snack in Mexican, is a crisp taco shell filled with anything - meat, chicken, refried beans and garnished with lettuce, onion, cheese, sauce, olives, tomatoes, sour cream, etc. A meat taco must contain at least 15% fresh meat.

1. From Abuelita Mexican Food Products

Taco shells range from 4-3/4 inches to 5-3/4 inches across the bottom of the shell and are packed 200 per case.

A soft taco can be made by placing the filling on a corn tortilla, folding it over and frying it quickly. The garnish is added later.

Tostadas

Tostadas are the same as tacos except the tortilla is fried flat. It is filled and garnished usually with sour cream, guacamole and black olives. Although corn tortillas are the usual, flour tortillas may be used.

Enchiladas

An enchilada is a corn tortilla wrapped around a filling of meat, chicken, onion, cheese, etc. , then covered with enchilada sauce and baked. It is available frozen as either beef enchilada, cheese enchilada or beef with VPP in sizes ranging 1-3/4 oz. to 3-1/2 oz. Packs vary from 6/30 count to 90 per box.

Flautas

Flautas are made by overlapping two corn tortillas. They are filled with anyone or more of an assortment of fillings, rolled and fried crisp.

Nachos

Nachos (or corn chips) are corn tortillas cut into pie-shaped pieces and deep fried. They are usually unsalted and served as an appetizer with chili con queso, a cheese sauce, beef or beans, or just plain salsa may be substituted. Corn chips are available fried either salted or unsalted in triangle or round chips in 5 and 7 pound tins respectively.

Burrito

A burrito is a soft, warmed flour tortilla filled with beef, chicken, refried beans, etc. It is usually folded in such a manner to keep the contents from spilling out. Since all of the ingredients are cooked, it is ready to eat as a snack or entree. Federal regulations require that a burrito contains at least 15% meat.

Beef and bean burritos are available with CN labels. The most common size burritos are 4, 5, and 5-1/2 oz. A couple of packers make 4-3/4 and 5-3/4 oz. sizes. Packs vary from 60 to 108 units per case.

Chimichanga

A chimichanga is a deep fried burrito. It is usually served with salsa, sour cream or guacamola. It is available in 4- and 8-oz. sizes packed 6/48 or 6/24 per case.

Quesadilla

A quesadilla is a Mexican pizza. A tortilla is crisped in the oven, then cheese, meat, sauce and chiles are added. It is available 96/5 oz. or 48/4 oz.

Mexican-Style Chili Dogs

Mexican-style chili dogs or pochitos are made with a frank and chili wrapped with a flour tortilla. They are available regular or fried. A variety of sauces, cheese, avocado, chili or sour cream may enhance the flavor and meal value.

Pochitos are packed 6/24 or 4/48 count in 4-1/2 oz. slices.

Tamales

Tamales have a beef or pork filling wrapped in corn masa and folded in the traditional Mexican style. Tamales must have at least 25% meat. Tamales with meat other than beef or pork must indicate the type of meat in the product name. Tamales are usually served as a side dish topped with chili or avocado sauce. They may be garnished with avocado slices, ripe olives or tomato wedges. Tamales are packed 60/5-oz. per box or in 2/5 dozen in 1-1/2-oz. size.

Chili Rellenos

Chili rellenos are mild green chiles stuffed with cheese, dipped in a corn batter and deep fried. Rellenos may be topped with guacomole, avocado, salsa, enchilada or spaghetti sauce.

Chili rellenos are available frozen in 3-oz. size packed 48 per box.

Mexican Style Refried Beans (C)

Refried beans are made from selected pinto beans, selected spices and refried to give the original Mexican food taste. The product is thick in consistency and is mild with no discernible "heat." They are available in 6/#10 cans and need only heating prior to serving.

Chili (With or Without Beans) (C)

Chili is available with or without beans in 6/#10 cans. It is ready to be heated and served.

Desserts

Desserts may be made from flour tortillas fried until crisp, removed and drained. Break into pieces and sprinkle with powdered sugar, nutmeg or cinnamon sugar.

Storage and Care

Frozen ethnic foods have an optimum shelf life at 0 degrees F of about three months. Since these products have a high moisture content and are tightly packaged, they would appear to have a much longer shelf life than three months. However, the fact is that the high spice levels in these dishes may promote a limited shelf life especially when the spices are blended. Thus, products held beyond three months, may develop flavors or intensity of flavors not apparent in the freshly packed product.

GROUP VIII - FRUITS, JUICES,
AND VEGETABLES, FROZEN

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GRADES

Commercial grades of processed fruits, juices and vegetables (frozen and canned) encompass many packer-distributor grades as illustrated on the chart which follows. These grades follow rather explicitly the standards for grades as issued by the U.S. Department of Agriculture.¹

Each factor of grade is evaluated on the basis of score points necessary to qualify for each grade, for example, 90 points for Grade A, 80 points for Grade B, etc. In some cases, there are limiting rule factors in which the product must score so many points for individual factors of grade to be included in a certain grade.

In some instances packers may require a slightly higher point score than does the USDA regulations. For example, the USDA total point score for frozen cut corn is 90, but a packer may require cut corn packed under his label to score 93 points to be labeled Grade A. Although scores for various factors of quality may vary between packers by a point or so, this does not necessarily indicate that some packers are superior to others. However, as could be expected, a packer may strive to upgrade the quality level of his product to give him a slight edge over the competition.

In addition to the A, B, and C levels of grades shown on the following chart, some packers offer a "Super label" which represents products with high Grade A scores which are derived from particular varieties or came from selected growing areas. These labels are generally recognized as superior and demand a higher price. They are purchased by proprietors of deluxe dining rooms who are looking for a menu edge (at any price).

The terms Grade A, Grade B and Grade C are used herein rather than the descriptive terms, Fancy, Choice, etc. For clarification the dual nomenclature is as follows:

<u>Grade</u>	<u>Fruits</u>	<u>Vegetables</u>
Grade A	Fancy	Fancy
Grade B	Choice	Extra Standard
Grade C	Standard	Standard

The USDA standards of grade also allow for a Grade D, or substandard Grade, in most processed products. These grades, however, are not generally available commercially. If, however, a Grade D product is offered at an attractive price, it might be worthwhile to examine the opportunity carefully. For example, if green beans are downgraded into substandard because of excessive defects (stems, variable sizes ragged cuts, etc.) the product might actually score a high Grade A in other points and represent a good buy particularly for serving from a steam table tray where one defective piece can be set aside. These products are normally sold under separate labels disassociated with the A, B and C labels.

1. See FNS Technical Assistance Manual "Directory of Information Sources".

CHART OF GRADE DESIGNATIONS OFFERED BY MAJOR BUYING GROUPS

Buying Group	1st Quality	2nd Quality	3rd Quality
	 GREEN	 BLUE	 RED
	 GOLD	 RED	 BLUE
	 RED	 BLUE	 GREEN
FEDERATED	 RED	 BLUE	 YELLOW
	 RED	 BLUE	 YELLOW
 F.A.B., INC.			— — — — —
	 BLUE	 RED	 GREEN
	 BLUE	 RED	 GREEN


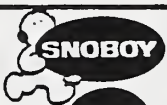


CHART OF GRADE DESIGNATIONS OFFERED BY MAJOR BUYING GROUPS

Continued

Buying Group	1st Quality	2nd Quality	3rd Quality
Nugget. BRAND	 BLACK	 RED	 GREEN
		LITTLE MOMMIE	PARTAKE
 FOODS USA DISTRIBUTOR	<i>Pocahontas</i>	Mount Stirling	
 S. E. RYKOFF & CO.	GOLDEN REY  RED	SILVER REY  BLUE	GLOWING STAR  GREEN
 SYSCO	 SYSCO Supreme - Gold Imperial - Blue Classic - Red	 SYSCO Reliance- Green	VALUE LINE _____ BROWN
 KRAFT FOODSERVICE	5 STAR BLUE	4 STAR RED	3 STAR GREEN
 North American Foodservice	 North American	 Host Delight	 Host Pak
	BLUE	RED	GREEN

CHART OF GRADE DESIGNATIONS OFFERED BY MAJOR BUYING GROUPS

Continued

Buying Group	1st Quality	2nd Quality	3rd Quality
 PACIFIC GAMBLE ROBINSON CO.	 FROZEN  CANNED	 CANNED	— — — — —
LIL BRAVE	BLUE	RED	GREEN
BONDED	GOLDBON	— — — — —	— — — — —

NOTES

- 1st Quality:** Packer Grade A for canned and frozen vegetables and frozen fruits. Packer Grade B (Choice) for canned fruits. Exception: Code Grade B fruits are packed under the 2nd Quality label.
- Frosty Acres French Fries:** Color represents length of potato:
Red = Premium Length (extra long); Brown = Long; Blue = Line Flow (variable lengths).
- North American Buying Group** permits members to use their own "house" brands which may have different color or brand codes. House labels are packed under buying group contracts using the same quality standards.
- Lil Brave and Bonded:** Logos not furnished.
- Sysco update:** New corporate label program is being phased in as follows: Supreme Gold = Rare and unique products; Imperial Blue = Fancy vegetables and fancy and choice fruits from prime growing regions; Classic Red = Fancy vegetables and choice fruits from non-prime growing regions. Some Sysco and Buy Line labels will remain in the distribution system until supplies are exhausted.
- NIFDA update:** Prime Pak = Fancy vegetables and choice fruits from prime growing regions; Royal Pak = Same as Prime Pak except from any region. NIFDA claims both will score 5 points higher than the minimum level for USDA Grade A. Dandy Pak = Fancy vegetables and choice fruits which meet USDA Grade Standards.

Picking. Most apples are harvested by hand. The pickers need to know the final use of the product to determine when it should be picked. Other guidelines include days from full bloom, pressure tests on sample specimens and soluble solids content determinations.

Peeling. Apples are poorly adapted to mechanical peeling because of their irregular shapes and the presence of cavities. A combination of caustic and pressurized steam is introduced, which loosens the skin. They may be fed into one of two types of machines. The traditional unit is a rotary, neoprene foam lined machine which incorporates an internal spiral. The skin is removed by pressurized water sprays and tumbling action of the fruit. Another unit is a dry peel machine which uses oscillating nets to remove most of the peel without water.

Coring. Conveyors carry the fruit through an aligning section so that the stem or blossom end is in a downward position and centered. Coring tubes enter the fruit removing the core. Seed-cell knives enter the core cavity and remove any remaining seed-cell and carpel material. The depth and expansion of knives is automatically controlled on the basis of size of the fruit.

Slicing. Overhead knives move downward through the fruit cutting it into equal sections ranging from 2 to 14 pieces.

Because of oxidase enzymes present in apple tissue, the slices tend to develop a brown discoloration when exposed to air (when fresh or after thawing). Dipping the slices in a 1-2% brine solution with added sulfite prevents discolorization for a short while (24-36 hours). Slices for freezing are frequently vacuum-impregnated with sulfite solution while canners use a sugar syrup and ascorbic acid to inhibit browning.

Packs: Frozen apples are packed in dry sugar at a ratio of 7 to 1 (7 parts of apples to 1 of sugar). Northern Spy apples, produced in Michigan, are a favorite of many packers. Apples are packed in 30 pound tins with slip top lids or in 5-pound poly bags, 6 bags to the case.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, frozen apples must possess similar characteristics and characteristic flavor and odor, meaning that the product is free of objectionable flavors and odors.

U.S. Grades of frozen apples are A and C.

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Limiting Rule*</u>
Color	20	14-16
Size	20	14-16
Defects	20	14-16
Character	40	28-33

*Frozen apples that score in these ranges cannot be graded above Grade C regardless of the total score.

Color refers to uniformity and brightness of the color of the apples

Size refers to the degree of wholeness and the uniformity of thickness of the units.

Defects refers to the degree of freedom from harmless extraneous vegetable matter, from damaged or seriously damaged units and from carpel tissue.

Character refers to the texture of the units and the tendency of the units to retain their conformation without materially softening or disintegrating.

Applesticks

Applesticks, also called apple fries, consist of diced apples formed and extruded in the shape of a stick and coated with a pastry batter (approximately 25% breading). Each stick weighs approximately 1/2 oz. after breading. Sticks are packed 128 per package, 2 packages per case (384 count). However, pack size might vary from one packer to another.

An alternative product is available as a mini apple pie, which is a moist, thin, batter-coated, 1/2-ounce bite of apple pie.

There are no grade standards for these products, thus they may vary from packer to packer.

Although a substantial number of cultivated blackberries are grown in Alabama, California, North Carolina, Missouri, Oklahoma and Texas, the USDA reports only those grown in the Pacific Northwest. A very small percent of the total crop, less than 3 percent, is sold on the fresh market. Over 90 percent of the remaining processed berries are frozen and the rest used directly for the production of jams and jellies.

Packs: Whole individual quick frozen (IQF) blackberries are size-graded to approximately 5/8 inch. They are available in 30-pound tins with slip lids and 5-pound poly bags. Evergreen or Thornless Evergreen and Marion are popular varieties grown in the Northwest.

Factors of Quality: Grades of blackberries are Grade A and Grade B. Only Grade A berries are frozen and those are individually quick frozen. Factors of grade for blackberries, boysenberries, dew berries, loganberries, youngberries and other similar type berries are listed below:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	30	21-24
Absence of Defects	40	28-33
Character	30	21-25

FOOD FACTS

VIII - BLACKBERRIES, FROZEN

Color refers to the uniformity of the typical color. Berries may be "practically uniform typical color" (Grade A) or "reasonably uniform color" (Grade B). To be Grade A, not more than a total of 10 percent by weight of the berries may vary markedly from the intensity and luster of the characteristic color of well-ripened berries, provided not more than 5 percent by weight of the berries vary markedly from the intensity and luster of the characteristic color of reasonably well-ripened berries.

Absence of defects refers to the degree of freedom from harmless extraneous vegetable material; from leaves, pieces of leaves, stems and caps, from underdeveloped berries; and from berries damaged by blemishes, insect or pathological, or other similar injury.

Character refers to maturity, texture and appearance as well as the degree of disintegration of the berries. A berry is considered "crushed" if more than 50 percent of the drupelets are crushed, broken or detached, or if the normal shape of the berry is otherwise materially affected or destroyed.

FOOD FACTS

VIII - BLUEBERRIES, FROZEN

There are two types of blueberries, wild and cultivated. The wild blueberries have a limited use in the food service trade. Cultivated blueberries grown in Oregon and California are individually quick frozen. They are packed in 3- pound packages, 12 to the case, in 5- pound poly bags, 6 to the case and also in 28 and 30-pound tins.

Factors of Quality: Grades of blueberries are Grade A, B and C. Only Grade A berries are frozen and those are individually quick frozen.

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	16-17
Absence of Defects	40	32-35
Character	40	32-35

These grade factors have the same meaning for blueberries as they do for blackberries. (See above.)

Cherries can be divided into two principal types, sweet and tart (red sweet pitted - RSP, and red tart pitted - RTP). Sweet cherries are grown in the West and are available in light or dark color. Royal Ann is the principal variety (LSP) and Bing, the dark sweet cherry variety (DSP). Montmorency is the principal variety of tart cherries (RTP) and is grown in the East, primarily Michigan, Pennsylvania and New York. A pitting machine or process is used to remove the pits from cherries and since this process is not 100 percent proficient, the majority of complaints about cherries is that of remaining pits.

Cherries are packed in 3 pound packages, 12 to the case, 6/5 pound poly bags and 30 pound tins with slip tops. Sweet cherries are available in Grades A and B while red tart pitted cherries are available in Grades A, B and C. Only Grade A cherries are frozen; other grades are canned used in processing.

Red Tart Pitted Cherries

Red tart pitted cherries are graded according to the following factors and score points:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	30	24-26	21-23
Freedom from Pits	20	16-17	14-15
Freedom from Defects	20	16-17	14-15
Character	30	24-26	21-23

Grade A cherries must score not less than 90 points; Grade B, 80 points; and Grade C, 70 points.

Color refers to the relationship of frozen cherries to bright and properly ripened berries. Color also refers to the uniform color or the number of cherries that vary markedly from this color due to oxidation, improper processing, or other causes, or that are undercolored.

Freedom from pits refers to the incidence of pits and pit fragments.

Freedom from defects refers to the degree of freedom from harmless extraneous material, mutilated cherries, and cherries blemished by scab, hail injury, discoloration, scar tissue or by other means.

Character refers to the physical characteristics of the flesh of the cherries.

Sweet Cherries

There are two types of frozen sweet cherries: (1) light sweet type (such as Napoleon or Royal Ann varieties), and (2) dark sweet type (such as Bing or Lambert varieties).

There are two styles of frozen sweet cherries: (1) pitted-whole, stemmed cherries with pits removed, and (2) unpitted-whole, stemmed cherries without the pits removed.

FOOD FACTS

VIII - CHERRIES, FROZEN

Frozen sweet cherries are graded according to the following factors and score points:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	30	21-24
Size and Symmetry	10	7-8
Defects	30	21-24
Character	30	21-25

Grade A cherries must score not less than 85 points and Grade B, 70 points.

The grade is determined immediately after thawing to the extent that the units may be separated easily and are free from ice crystals. In addition to considering factors rated by score points, varietal characteristics and flavor are not rated by score points.

Color refers to the relationship of the cherries to bright and typically well-ripened sweet cherries. Color also refers to the uniform color or percentage (by count) of the number of cherries that vary markedly from this color because of discoloration due to oxidation, improper processing, or other causes, or because they are not well-ripened.

Size and symmetry refers to the shape and uniformity of the frozen cherries.

Defects refers to the degree of freedom from harmless, extraneous material, pits and from damaged and seriously damaged cherries.

Character refers to degree of ripeness, texture and tenderness and the relative thickness of flesh of the frozen sweet cherry.

FOOD FACTS

VIII - COCONUT, FROZEN

Frozen or dried, grated coconut is available in several styles: shredded, flaked, chipped, sliced, coarse, medium, macaroon, fine and extra fine. Frozen grated coconut is packed 6/5 lb. for the food service trade. Most coconut utilized by the food service industry is dry packed. This product is dried to approximately 3-1/2% moisture and is packed in 20 lb. cartons. There are no grade standards for coconut.

FOOD FACTS

VIII - MELON BALLS, FROZEN

Melon balls are spheres of melon flesh prepared from Cantaloupe or Honey Dew melons. Melons of other suitable varieties may be added as well as a suitable fruit and/or vegetable garnish.

Melon balls are available as an individual variety, i.e., Cantaloupe Melon Balls or Honey Dew Melon Balls or as mixed varieties, i.e., Mixed - Cantaloupe and Honey Dew Melon Balls or Mixed - Honey Dew and Cantaloupe Melon Balls. In the latter two types, the first variety named must consist of not less than 50 percent by weight and the second variety of not less than 33-1/3 percent by weight.

FOOD FACTS

VIII - MELON BALLS, FROZEN

Packs Melon balls may be packed in 5-pound poly bags or in 6 or 8 pound sealed cans. Melon balls are available in Grade A or Grade B, but most of the pack is from Grade A product.

Factors of Quality: Melon balls are graded according to the following factors and score points:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	16-17
Uniformity of Size & Shape	30	24-26
Absence of Defects	30	24-26
Character	20	16-17

Grade A melon balls must score not less than 90 points and:

- (1) possess a good flavor and color
- (2) have good color
- (3) are practically uniform in size and shape
- (4) are practically free from defects
- (5) have good character
- (6) score not less than 90 points.

Grade B product must score not less than 80 points.

FOOD FACTS

VIII - MIXED FRUIT, FROZEN

Mixed fruit usually contains individually quick frozen sliced peaches, honey dew melon balls, cantaloupe balls and light or dark grapes. Some packers vary the mix (since there are no grade standards) by substituting pineapple tidbits and/or strawberries for sliced peaches. Other combinations include apples, marionberries, strawberries, dark sweet cherries, red sweet cherries and plump prune plums. Some products have added sugar syrup and others do not. The frozen product contains completely different fruits from a canned fruit mix which is a substitute for canned fruit cocktail. There are no grade standards for mixed fruit.

Fruit mix is usually packed in 10-pound tins.

Peaches for freezing are of the freestone type as opposed to clingstone which are canned. The Rio-Oso variety grown in California is a high quality peach that is bright orange with red centers. Although frozen peach halves are available, most of the frozen market is sliced 1/2 to 3/4 inch in width and packed in 50° syrup. The syrup is made up of 4 parts sugar to 1 part water.

An 8-1/2-pound tin will contain approximately 6-1/2 pounds of fruit and 2 pounds of sugar syrup. Peaches are also packed on 30-pound tins. IQF peaches are available in 30-pound tins.

Factors of Quality: Peaches are available as Grade A, Grade B or Grade C. Peaches are graded according to the following factors of grade and score points:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	20	16-17	14-15
Size & Symmetry	20	16-17	14-15
Defects	30	24-26	21-23
Character	30	24-26	21-23

In addition to factors which are scored, the following factors of quality are considered but not scored:

- (1) Varietal characteristics
- (2) Flavor.

Color. The score for the factor of color is evaluated by considering the overall color of the units. Abnormal discoloration near or part of the pit cavity shall be considered in the evaluation of the overall color of the unit.

Size and Symmetry refers to the uniformity of size and symmetry of the units of peaches in halved, quartered and sliced styles.

Defects refers to the degree of freedom from harmless extraneous material, pit material, peel, blemishes, and from any other defects not specifically mentioned that detract from the appearance or edibility of the product.

Character refers to the degree of ripeness, the texture, the firmness and the tenderness of the fruit, and the tendency of the units to retain their apparent confirmation and size without material disintegration.

Strawberries are available sliced or whole, usually packed 4 parts of strawberries to 1 part dry sugar. The sliced berries are cut 7/16 inches in width. Whole berries are size graded less than 5/8 inch in diameter - small; 5/8 to 1-1/4 - medium; and over 1-1/4 inch in diameter - large. The highest quality strawberries are produced in California and the Pacific Northwest, but Mexico produces a good quality product. Hood Benton and Totem varieties are noted for their excellent appearance and outstanding flavor.

Packs: Frozen whole strawberries are packed in 6-1/2-lb. sealed cans, 6 cans to the case, or in 30-lb. cans with slip-top lids. Sliced berries are packed in 6-1/2-pound sealed cans and whole strawberries in 6 pound cans, both are packed 6 to the case. They are also available in 30-pound tins. IQF strawberries (without added sugar) are available packed in 5- pound poly bags, 6 to a case.

Factors of Quality: U.S. Grade standards are A and B and the grade reference in the Code of Federal Regulations is 7 Part 52.1981. The grade of frozen strawberries is determined immediately after thawing so that the units may be separated easily, and are free from ice crystals.

Strawberries are graded according to the following factors and score points:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	40	32-35	28-31
Defects	40	32-35	28-31
Character	20	16-17	14-15

In addition to the factors which are scored, the following factors of quality are not scored:

- (1) Varietal characteristics
- (2) Flavor and odor
- (3) Size relative to U.S. Grade A.

Grade A strawberries possess similar varietal characteristics, good flavor, good color, good character, are practically free from defects; score not less than 90 points; and with respect to wholestyle, contain not more than 5 percent, by count, of whole strawberries that are small size (less than 5/8 inch in diameter).

Grade B strawberries must score not less than 80 points and Grade C, not less than 70 points.

Color refers to the strawberries as a mass and relationship of uniform pink to red color to dull, grey or reddish, brown cast.

Defects refer to the degree of freedom from grit, sand, or silt, from harmless extraneous material, caps and portions thereof, sepal-like bracts and portions thereof, stems, short stems and damaged strawberries.

Character refers to firmness, the degree of wholeness, degree of seediness, degree of disintegration as evidenced by partial strawberries and mushy strawberries.

Storage and Care

If containers are well sealed most frozen fruit can be held at zero degrees F for 18 months. Pitted cherries might be held a little longer (24 months) and strawberries somewhat less (15 months). Grated Coconut, melon balls and mixed fruit should be used within 12 months.

Place containers of frozen fruit in a cooler for tempering prior to using. The length of time will vary from several days for fruits packed in 30-lb. tins to 2 days for fruit in 6-lb. cans. The length of time will also depend on the temperature of the refrigerator. If the fruit is to be used upon arrival, the distributor can temper the fruit in his cooler prior to delivery.

After the fruit is thawed, keep containers covered and store at 32-35°F. The length of time the product can be held will depend on the fruit. The best rule of thumb is to use the product within 21 days or less after thawing.

FOOD FACTS

VIII - FRUIT JUICE CONCENTRATE, FROZEN

Most juices are manufactured as frozen concentrates, although they are available as chilled single strength juices. They are also available as blends or punches.

Concentrates are available in various levels of concentration ranging from 1 to 1 to 1 to 7, i.e., the product is reconstituted into single strength juice by mixing one part of concentrate with one, two or three, etc. parts of water. Sugar and/or citric acid may be added to some fruit juice concentrates.

There are grade standards for some fruit juice concentrates but not others. Grades, where applicable, are factors of quality for color, reconstitution ability, flavor or defects (which means juice cells, pulp, seeds, portions of seeds, specks, particles of membrane, core, peel, or any other distinctive features that may adversely affect the appearance or drinking quality of the juice). Analytical values, such as brix level or oil content, are also considered as a part of the grade of some juice concentrate.

Although grade standards exist for more than one grade of juices, Grade A is the predominant grade used by the food service trades. See the section on frozen fruits for information on Packer Grades.

The first successful frozen concentrate was introduced during the middle-to-late 1940's. It was during this period that advancements in freezing technology came along coupled with new evaporator equipment designs - i.e., a low-temperature, high-vacuum evaporator and a high-temperature short-time evaporator. Also introduced during this period was the concept of "cut-back", i.e., the juice was concentrated beyond the desired point of concentration, then the product diluted to the desired concentration with fresh juice. The process returns some of the volatiles lost during evaporation and thus restores some of the taste and flavor qualities.

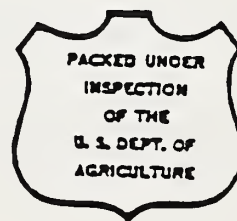
Major steps in processing citrus juice into frozen concentrated juice are as follows:

- | | |
|------------------------------|------------------------------|
| 1. Fruit Unloading | 11. Heat Exchanger |
| 2. Grading & Sampling | 12. Evaporation |
| 3. Sample to Lab | 13. Concentrate |
| 4. Storage Bins | 14. Fresh Juice Added |
| 5. Washer | 15. Samples to Lab |
| 6. Grading | 16. Concentrate |
| 7. Extractor | 17. Slush Freezing |
| 8. Finisher | 18. Can Filler & Closing |
| 9. Blending Tanks & Sampling | 19. Blast Freezer |
| 10. Samples to Lab | 20. Warehouse -10°F (23.3°C) |

The Federal Inspection Mark for Fruit Juices, Drinks and Drink Products



OR



The brix:acid ratio determines the flavor and tartness of finished apple juice. Soluble solids content of apple juice may range from 10.5° to 11.5° brix depending upon the grade and whether the juice was made from fresh or frozen concentrate. The equivalent malic acid content will range between 0.25 and 0.7 percent.

Apple juice concentrate is made by evaporating the water from the juice in a vacuum system with the temperature held below 60°C to avoid thermal degradation.

Apple juice concentrate may be prepared in different reconstitution ratios ranging from 1 to 1 to 7 to 1. The most popular is a 3 to 1 dilution factor (3 cans of water to 1 can of juice), with a minimum brix value of 42.2°F. This juice concentrate is not sweetened and is packed 12/32 oz. and 24/18 oz. It is also available with a 5 to 1 dilution factor, packed 6/24 oz. or in a reconstituted portion pack of 48/5.5 oz. Higher concentrates seem to turn darker in color.

Raw juice contains a rather high content of coarse suspended solids and colloidal substances, therefore the juice must be filtered and clarified. Many processors use protolytic enzymes for clarification. The filtered, clarified juice is sterilized at 85°C (185°F) for 15 to 30 seconds prior to canning or bottling.

Factors of Quality for frozen apple juice concentrate (with the maximum number of points which may be awarded for each) are as follows.

<u>Factor</u>	<u>Points</u>	<u>Grade B Limiting Score</u>
Color and Clarity	20	16-17
Defects	20	16-17
Flavor and Aroma	60	48-53

U.S. Grades of apple juice concentrate are A and B; Grade A must score at least 90 points and Grade B must score 80 points. In addition to the total points, there is a limiting rule for each grade. The limiting rule means that a product must score at least x number of points for a particular factor, and if not, the product cannot be graded higher regardless of the total score. For example, the limiting rule for flavor and aroma is a score of 58 to 53 for Grade B. If the product scores in this range, it cannot be graded above Grade B, regardless of the total score.

Color and clarity for top quality juice means that the color of frozen concentrate apple juice after reconstitution is bright and transparent and of a light golden appearance.

The factor of defects refers to the freedom from sediment or other residues, dark specks or any other defects which affect the appearance or palatability of the juice.

Flavor and aroma refers to the degree of excellence and palatability of a distinct apple juice flavor and aroma typical of apple juice.

FOOD FACTS

VIII - APPLE JUICE CONCENTRATE, FROZEN

The factor of defects refers to the freedom from sediment or other residues, dark specks or any other defects which affect the appearance or palatability of the juice.

Flavor and aroma refers to the degree of excellence and palatability of a distinct apple juice flavor and aroma typical of apple juice.

FACT SHEETS

VIII - CRANBERRY JUICE CONCENTRATE, FROZEN

Cranberry juice cocktail is produced as follows: frozen berries are thawed and cleaned in tanks of warm water, then split in a hammer mill. The extraction of juice is accomplished with specially designed presses consisting of stainless steel drums with perforated screens near the bottom and rubber bladders inside.

The inflated bladder presses the split berries against the screen (with the aid of rice hulls) and the resulting juice is chilled. The chilled juice is blended with juice from other batches to obtain the desired uniform color (no artificial color is added). The cranberry juice is mixed with other juices- apple, prune, apricot and/or grape juice. The combined juices are filtered and a sweetener added. The juice cocktail is evaporated to produce the desired concentrate.

Cranberry juice cocktail is a concentrate for dilution at a 3 to 1 ratio. It is packed in 32 oz. cans, 12 to the case.

FOOD FACTS

VIII - FRUIT PUNCH CONCENTRATE, FROZEN

Fruit punch is a blend of several fruit juices, such as grape, apple, pineapple, orange, lemon, grapefruit, tangerine and lime, etc. It may also contain corn syrup, sugar and pectin. Fruit punch concentrate can be reconstituted to single strength by adding 3 cans of water to 1 can of juice, or 5 cans of water to 1 can of concentrate. The 3 to 1 ratio is packed in 32 oz. cans, 12 to the case. The 5 to 1 concentrate is packed in 42 oz. cans, 6 can to the case.

FOOD FACTS

VIII - GRAPE JUICE CONCENTRATE, FROZEN

Sweetened

Sweetened grape juice concentrate is prepared from Concord grapes or from a mixture of Concord and California red grapes. Sugar and citric acid are added. The dilution factor may vary from 1 to 1 to 1 to 6. Most popular is 3 to 1 (3 cans of water to 1 can of juice) and 4 to 1. The product is packed 48/6 oz., 24/12 oz. or 12/32 oz. sizes.

Factors of Quality: U.S. Grade standards are A and B for sweetened grape juice concentrate. Factors of grade of frozen concentrated grape juice include those which are not scored and those which are scored. The factor which is not scored is the ease of reconstituting. The factors which are scored, the score points and the limiting points are as follows:

FOOD FACTS

VIII - GRAPE JUICE CONCENTRATE, FROZEN

<u>Factor</u>	<u>Points</u>	<u>Grade B Limiting Score</u>
Color	20	14-16
Uniformity of Size	20	---
Defects	40	28-33
Texture	20	14-16

Grade A must score 85 points and Grade B 70 points.

Unsweetened

Unsweetened grape juice concentrate does not have U.S. grade standards but is packer graded Grade A. This juice is packed 24/12 oz. or 12/32 oz.

FOOD FACTS

VIII - GRAPE FRUIT JUICE CONCENTRATE, FROZEN

Grapefruit juice concentrate may be obtained sweetened or unsweetened and either white or amber, or pink or red.

The product is packed 24/12 oz. and 12/32 oz.

The grade of grapefruit juice concentrate is based on observation and analysis for the following factors:

<u>Quality</u>	<u>Analytical</u>
1. Appearance	1. Brix Measurement
2. Color	2. Brix Acid Ratio
3. Defects	3. Free & Suspended Pulp
4. Flavor	4. Recoverable Oil
5. Reconstitution	
6. Total Score Points	

The factors which are scored, the score points and the limiting points are as follows:

<u>Factor</u>	<u>Points</u>	<u>Grade B Limiting Rule</u>
Color	20	16-17
Defects	20	16-17
Flavor	60	48-53

For Grade A the appearance of frozen concentrated grapefruit juice must be that of fresh grapefruit juice and the color has to be good. The concentrated grapefruit juice must be practically free of defects, the flavor must be good and it must reconstitute properly. Minimum points for Grade A is 90.

FOOD FACTS

VIII - GRAPEFRUIT JUICE CONCENTRATE, FROZEN

For Grade B, the color and flavor of frozen grapefruit juice concentrate must be reasonably good and it must also be reasonably free of defects. It must reconstitute properly. Minimum points for Grade B is 80.

FOOD FACTS

VIII - LEMON & LIME JUICES, FROZEN

Lemon Juice, Single Strength

Lemon juice is not concentrated but is packed as a pure single strength juice. It takes 30 to 40 fresh lemons to equal one 30 oz. can of lemon juice. The product is packed 12/30 oz. There are no U.S. Grade standards for lemon juice.

Lemonade Concentrate

Lemonade concentrate is prepared from lemon juice and one or more sweetening ingredients. One 18-oz. can of lemonade is the equivalent of 15 fresh lemons and 3/4 pound of sugar. It may contain added lemon oil and may or may not contain water in quantities sufficient to standardize the product. Lemonade contains not less than 48.0 percent soluble solids.

Factors of Grade are color - 20 points, absence of defects - 20 points and flavor - 60 points. Grade A lemonade must score at least 85 points and Grade B, not less than 70 points.

The Grade B limiting rule is as follows:

<u>Factor</u>	<u>Limiting Score</u>
Color	14-16
Absence of Defects	14-16
Flavor	42-50

Color of frozen lemonade concentrate refers to the color of the reconstituted lemonade in comparison with freshly squeezed lemonade.

Defects refers to the degree of freedom from seeds or portions of seeds, from harmless extraneous material, from objectionable material and from other defects not specifically mentioned that affect the appearance or drinking quality of the product.

Flavor refers to the flavor of reconstituted lemonade when compared to freshly squeezed lemon juice. The product must be free or reasonably free of off-flavors such as terpenic, oxidized, rancid or other abnormal flavors. Other factors of flavor include the grams of acid per 100 ml. of lemonade, the amount of recoverable oil, and the Brix acid ratio. Lemonade shall test not less than 10.5° Brix.

Lemonade-Limeade Concentrate

Lemonade-limeade concentrate is a mixture of lemonade and/or limeade concentrate. It may contain citric acid and nutritive sweeteners. Lemonade-limeade concentrate may be reconstituted at a 3 to 1 ratio. The product is packed 12/32 oz.

Lime Juice, Single Strength

Lime juice is not concentrated but is packed as a pure single strength juice. It takes 30 to 40 fresh lemons to equal one 30 oz. can of lime juice. The product is packed 12/30 oz. There are no U.S. Grade standards for lime juice.

Limeade Concentrate

Limeade concentrate is prepared from lemon juice and one or more nutritive sweetening ingredients. It may contain added lime oil and may or may not contain water in quantities sufficient to standardize the product. Limeade must not contain less than 48.0 percent soluble solids.

Factors of Grade are color - 20 points, absence of defects - 20 points and flavor - 60 points. Grade A limeade must score at least 85 points and Grade B, not less than 70 points.

The Grade B limiting rule is as follows:

<u>Factor</u>	<u>Limiting Score</u>
Color	14-16
Absence of Defects	14-16
Flavor	42-50

Color of frozen limeade concentrate refers to the color of the reconstituted limeade in comparison with freshly squeezed limeade.

Defects refers to the degree of freedom from seeds or portion of seeds, from harmless extraneous material, from objectionable material and from other defects not specifically mentioned that affect the appearance or drinking quality of the product.

Flavor refers to the flavor of reconstituted limeade when compared to freshly squeezed lime juice. The product must be free or reasonably free of off-flavors such as terpenic, oxidized, rancid or other abnormal flavors. Other factors of flavor include the grams of acid per 100 ml. of limeade, the amount of recoverable oil, and the brix acid ratio. Limeade shall test not less than 10.5° Brix.

Orange juice concentrate must have a brix value of not less than 41.8° and when reconstituted according to directions (3 to 1 or 4 to 1), must test not less than 11.8° brix.

Sweetened orange juice concentrate must have a brix value of not less than 42°, and when reconstituted according to directions, must test not less than 11.8° brix.

Sweetened juices, when reconstituted, will have a higher brix/acid ratio than the unsweetened product, i.e., the sweetened juices contain a higher percentage of sugar compared to the total percent of acidity. The sweetened juice may be naturally sweet or it may have sugar added.

Factors of Quality: Orange juice concentrate must reconstitute properly. Other factors which are rated by score points include color, defects and flavor. A maximum of 40 points may be awarded for color, 20 for defects and 40 points for flavor. To meet Grade A, the product must score at least 90 total points.

Grade B juice must score at least 80 total points. In addition to the total points, there is a limiting rule for each grade. The limiting rule means that a product must score at least x number of points for a particular factor, and if not, the product cannot be graded higher regardless of the total score. For example, the limiting factors for Grade B are as follows:

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Limiting Score</u>
Color	40	32-35
Defects	20	16-17
Flavor	40	32-35

If a sample of juice scored 35 points for color, 19 for defects and 38 for flavor, the total score of 93 points would be over the minimum by 90 points for Grade A. The limiting rule is that if it does not score higher than 35 points for color, it cannot be graded above Grade B.

Color of orange juice is classified according to USDA Orange Juice Color Standards or by any colorimeter approved by the USDA which gives equal values to the USDA standards. The highest score means that the juice is bright and typical of rich-colored fresh orange juice.

The factor of defects concerns degree of freedom from small seeds, discolored specks, white flakes, harmless extraneous material and other similar material; from recoverable oil; and from juice sacs and particles of membrane core and peel in excess of that normally found in orange juice.

The flavor factor is determined by the flavor (taste) of the product in relation to fresh orange juice.

FOOD FACTS

VIII - PORTION JUICES

Single Strength

Portion frozen or canned (chilled) fruit juice must meet USDA Grade Standards for Grade A canned single strength juice or if the product is from concentrate, it must meet the brix and acid requirements of canned single strength juice. Portion juice is available in clear squat cups and fluted cups.

Portion juice is available in the following varieties:

Apricot Nectar	Lemonade	Pineapple Juice
Apple Juice	Orange Juice	Pineapple/Orange Juice
Cranberry Cocktail	Orangeade	Prune Juice
Grapeade	Orange/Grapefruit Blend	Fruit Punch
Grape Juice	Peach Nectar	Tomato Juice
Grapefruit Juice	Pear Nectar	

Caution: Not all portion juices contain 100 percent single strength juice. Many products from dairies contain only 10% juice thus must be labeled "Juice Flavored Drinks".

FOOD FACTS

VIII - JUICE BARS, FROZEN

Juice bars can have as little as 1/8 cup of fruit juice toward the 3/4 cup school lunch-fruit-vegetable meal pattern requirement, i.e., they must contain at least 1 oz. of single strength juice. Most juice bars contain 1/4 cup of single strength juice and weigh 2-1/2 to 3 oz. total. Juice bars may be packed 72 to 96 bars to the case and are available with a CN label or a certificate indicating the amount of single strength juice the product contains. There are no U.S. Grade standards for juice bars. They are available in the following flavors:

Apple	Fruit Punch	Melon
Cherry	Grape	Watermelon
Cherry-Apple	Orange	and others

Caution: Not all juice bars contain 2 oz. of single strength juice. Some contain as little as 10% thus must be labeled "Juice Flavored Ice".

FOOD FACTS

VIII - STORAGE & CARE, FROZEN

If properly stored at 0°F or below, frozen juice concentrates can be held for up to 24 months without noticeably flavor changes. Frozen concentrates should be placed in a refrigerator (or chill-room) for tempering (thawing) 1 - 3 days prior to reconstituting into single strength juice. The length of time depends on the size of the container, i.e., large containers require long to thaw.

Single strength juice can be held at 32-35°F for about 21 days without noticeable loss of flavor. However, a more positive position is to resupply the juice weekly. Keep containers of juice well covered to prevent transfer of flavors from open items which may be in the cooler and shake well before serving.

Grades¹

Commercial grades of processed vegetables, fruits and juices (frozen and canned) encompass many packer-distributor grades as illustrated on the chart shown in the frozen fruit section. These grades follow rather explicitly the standards for grades as issued by the U.S. Department of Agriculture.²

Each factor of grade is evaluated on the basis of score points necessary to qualify for each grade, for example, 90 points for Grade A, 80 points for Grade B, etc. In some cases, there are limiting rule factors in which the product must score so many points for individual factors of grade to be included in a certain grade.

In some instances, packers may require a slightly higher point score than does the USDA regulations. For example, the USDA total point score for frozen cut corn is 90, but a packer may require cut corn packed under his label to score 93 points to be labeled Grade A. Although scores for various factors of quality may vary between packers by a point or so, this does not necessarily indicate that some packers' grades, as listed on the following charts, are superior to others. However, as could be expected, a packer may strive to upgrade the quality level of his products to give him a slight edge over the competition.

In addition to the A, B and C levels of grades shown on the following chart, some packers offer a "Super label" which represents products with high grade scores which are derived from particular varieties or come from selected growing areas. These labels are generally recognized as superior and demand a higher price. They are purchased by proprietors of deluxe dining rooms who are looking for a menu edge (at any price).

The terms Grade A, Grade B and Grade C are used herein rather than the descriptive terms, Fancy Choice, etc. For clarification the dual nomenclature is as follows:

Grade	Vegetables	Fruits
Grade A	Fancy	Fancy
Grade B	Extra Standard	Choice
Grade C	Standard	Standard

The USDA standards of grade also allow for a Grade D, or substandard grade, in most processed products. These grades, however, are not generally available commercially, however, if a Grade D product is offered at an attractive price, it might be worthwhile to examine the opportunity carefully. For example, if green beans are downgraded into substandard because of excessive defects (stems, variable sizes, ragged cuts, etc.) the product might actually score a high Grade A in other points and represent a good buy, particularly for serving from a steam table tray where one defective piece can be set aside. These products are normally sold under separate labels disassociated with the A, B and C labels.

1. Repeated from the Fact Sheets on Frozen Fruits.

2. See FNS Technical Assistance Manual, "Directory of Information Sources".

Beans, Green and Wax

Green beans which are also called snap, string, pole or bush beans, come in several different types and styles. The two main types are green and wax. "Blue Lake", a popular variety of green beans used extensively for both canning and freezing, is often named on the can or package. Originally the blue lake was developed and grown in the Pacific Northwest, but geneticists have produced hybrids with this variety which allow for much wider growing areas. Today it is almost a generic term as good quality varieties are available in the Midwest and even in New York and the South. The original blue lake was a dark green, stringless bean with a rich flavor. The beans from New York and the South are generally lighter in color than those grown in the Northwest and Midwest. Italian or "Romano" green beans are large flat beans. Shellie beans are a combination of young green string beans and mature, hulled shell-out beans.

Wax beans are a yellow waxy colored variety of stringless bean favored by many because of their distinctive and somewhat milder flavor. Types of packs for both styles include whole, French style, cut, short cut or mixed.

Whole beans are whole pods not less than 2-3/4 inches. French Style beans means that the pods are cut length wise. Cut beans range in length from 3/4" to 2-3/4". The most popular school lunch item is a cut green bean which measures about 1-1/2 inches in length. "Short cut" green beans are cut less than 3/4" in length.

In the western states, notably California, it generally takes from 25 to 39 days for a crop of bush snap beans to reach the harvesting stage after the field has reached full bloom. The principals affecting quality grade are fiber and seed content. Maturity changes rapidly and 1 or 2 days on either side of the optimum can be critical.

The green bean harvesting machine is a tractor mounted multirow machine that picks wide swaths both across and down the rows. It is designed for large scale green bean operations. A picking reel with unique flicking action flicks the beans off the stalk, resulting in reduced product damage and fewer bean clusters. The machine strips the beans from the plant, blows out loose trash and conveys the beans to a hopper which is taken immediately to the canning or freezing plant.

Frozen green beans are packed in 2-1/2 pound boxes, 12 to the master carton or they may be bulk-packed in 20 pound cartons U.S. Grade standards are A, B and C.

In addition to having similar varietal characteristics, good flavor and odor and a good bright overall color appearance (for Grade A), frozen green beans are graded on the following quality factors:

- | | | |
|----------------------|----------------|------------------------|
| 1. Color | 4. Decay | 7. Fiber |
| 2. Blemishes | 5. Workmanship | 8. Tough strings |
| 3. Mechanical damage | 6. Character | 9. Extraneous Material |

Defects are classified as major and severe, critical and total.

Total Acceptable Quality Level (AQL) and Absolute Limit (AL)
of Defects of Frozen Green Beans

Whole

<u>Grade</u>	<u>Major</u>	<u>Severe</u>	<u>Critical</u>	<u>Total</u>
Grade A AQL	4.5	1.25	0.32	12.5
Grade A AL	11.0	5.00	2.00	22.0
Grade B AQL	6.25	3.75	0.50	18.75
Grade B AL	14.00	10.0	3.00	32.0
Grade C AQL	19.5	6.25	0.80	25.0
Grade C AL	20.0	14.00	4.00	40.0

Cut and Short Cut

<u>Grade</u>	<u>Major</u>	<u>Severe</u>	<u>Critical</u>	<u>Total</u>
Grade A AQL	2.0	0.55	1.15	5.5
Grade A AL	10.0	5.00	2.00	21.0
Grade B AQL	2.8	1.70	0.20	8.5
Grade B AL	13.0	9.00	3.00	28.0
Grade C AQL	4.7	2.80	0.40	11.0
Grade C AL	10.0	13.00	4.00	36.0

French Cut

<u>Grade</u>	<u>Major</u>	<u>Severe</u>	<u>Critical</u>	<u>Total</u>
Grade A AQL	4.0	1.50	0.25	8.50
Grade A AL	10.0	5.00	2.00	16.00
Grade B AQL	7.5	3.0	0.40	12.5
Grade B AL	15.0	6.0	3.00	22.0
Grade C AQL	10.0	5.0	0.50	15.0
Grade C AL	18.0	11.0	3.00	25.0

Beans, Lima

Lima beans are commonly available in two types - Butter and Potato. Butter beans are smaller than the larger potato lima bean. Potato limas are either Baby or Fordhook. Small or large types can be purchased at various stages of maturity as indicated by green as the youngest, and yellow and white as the more mature. Each maturity level has its own flavor characteristics.

Frozen lima beans are individually quick frozen and packed either 2-1/2 pounds per carton, 12 cartons to the case; or bulk in 20-pound cartons.

Factors of Quality. In addition to the factors of quality which are rated by the following score points, lima beans are also considered for (1) Varietal Characteristics, (2) Flavor, and (3) Tenderness. Lima beans are graded according to the following factors and score points.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule*</u>	<u>Grade C Limiting Rule*</u>
Color	60	48-53	42-47
Defects	40	32-35	28-31

*Products that fall within this range cannot be graded above this grade regardless of total score.

U.S. Grade standards for lima beans are A, B and C. Grade A lima beans, in addition to scoring at least 90 points must possess similar varietal characteristics, possess a good flavor, be tender and have good color and be practically free of defects.

Grade B lima beans must score at least 80 points, possess similar varietal characteristics, possess a good flavor, be reasonably tender, have reasonably good color and be reasonably free of defects.

Grade C lima beans must score at least 70 points, possess Similar varietal characteristics, possess fairly good flavor, be fairly tender, have fairly good color and be fairly free of defects.

Color has reference to the color characteristics of the individual lima bean. Green means at least 50 percent of the surface area of the individual lima bean possesses as much or more green color than USDA lima bean green color standard for frozen lima beans. White means that the surface area of the individual lima bean is lighter in color than the USDA lima bean white color standard.

Defects refers to the degree of freedom from harmless extraneous vegetable material, from pieces of beans, shriveled beans, sprouted beans, discolorations, and beans that are blemished or seriously blemished.

Frozen broccoli is available in several styles as follows:

Spears or stalks	Longitudinally from 3-1/2 to 6" spears which may be cut.
Short spears or florets	From 1 to 3-1/2", may not weigh more than 0.2 oz. each and may be cut longitudinally.
Cuts	From 3/4 to 2", should contain not less than 25% by weight of head material and not more than 25% leaf material. The balance can be stalk.
Chopped	Cuts of less than 3/4" with the same percentage of head and leaf material as stalks.
Broken Pieces	Cut or chopped broccoli which does not meet the required percentage of head and leaf material.

Frozen broccoli is packed either 2-1/2 pounds per carton, 12 cartons to the case, or 20 pounds bulk. U.S. Grade standards are A, B and C.

Broccoli is graded not on score points as has been discussed with previous products but Acceptable Quality Levels (AQL).

In explaining AQL, first we must define what is classified as major, minor and severe defects, followed by tolerance levels.

Length of spears or stalks, short spears, cuts and shorts are assigned an acceptable range of lengths. Anything outside of those lengths are classified as major or minor defects.

In addition; color, uniformity of size, detached fragments, loose leaves, broken spears, damaged spears, blemished spears, trim, development, fiber and extraneous material are also defined for each style and classified as major, minor or severe defect.

Tolerance levels for defects are established for each grade for each style. In addition to meeting these acceptable tolerance levels, Grade A broccoli must meet the following prerequisites:

- (1) has similar varietal characteristics,
- (2) has good flavor and odor,
- (3) is practically free from grit and silt,
- (4) has good overall brightness, and
- (5) in the styles of cut, chopped and pieces, the individual buds are least reasonably well developed.

FOOD FACTS

VIII - BROCCOLI, FROZEN

Grade B broccoli must meet the acceptable tolerance levels established and must meet the following prerequisites:

- (1) has similar varietal characteristics,
- (2) has fairly good flavor and odor,
- (3) has no more than a trace of grit and silt,
- (4) has at least reasonable good overall brightness which may be slightly dull, and
- (5) in the styles of cut, chopped and pieces, the individual buds may be poorly developed if they do not materially affect the appearance of the product.

FOOD FACTS

VIII - BROCCOLI AND CAULIFLOWER

This frozen product, which is a mixture of broccoli and cauliflower, is also referred to as "Swiss Mix" or "Normandy Style". The mixture consists of approximately 60% broccoli cuts and 40% cauliflower florets. Broccoli and cauliflower mixture is packed either 20 pounds bulk or 12 2-1/2-pound cartons to the case. There are no grade standards for the mixture of broccoli and cauliflower, therefore, each product is graded separately.

FOOD FACTS

VIII - CARROTS, FROZEN

Frozen carrots are available whole, diced, sliced (plain or crinkle cut), in halves or in strips. Although whole carrots are packed in many sizes, baby carrots about 1" to 2" in length are the most popular size.

Sliced carrots are normally cut about 3/8" thick and range in diameter from 1/2 to 7/8". Diced carrots, which are a popular item for stews, are cut into 3/8" cubes. Frozen carrots are packed either 20 pounds bulk or 12 2-1/2-pound cartons to the case. U.S. Grade standards are A and B.

Factors of Quality for frozen carrots are listed below with the score points and the limiting rule:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	16-17
Uniformity of Size & Shape	20	16-17
Absence of Defects	30	24-26
Texture	30	24-26

Color of frozen carrots is based on the thawed product. The color is based on the uniformity and brightness of the typical exterior yellow to orange-yellow color of the units. The presence of green, white, or orange-brown units are scored under this factor when the overall color is affected.

Uniformity of Size and Shape of frozen carrots are determined by measuring the following:

- (1) Diameter of whole carrots
- (2) Width of halved carrots
- (3) Width of quartered carrots
- (4) Diameter and thickness of sliced carrots
- (5) Size of diced carrots.

Absence of Defects refers to the freedom from defective units or defects. "Defective units" or "defects" are units damaged by mechanical injury or other means, unpeeled units, unit blemishes, or seriously blemished by brown or black internal or external discoloration, sunburn, or green or white colored units, pathological injury or insect injury, and units blemished or seriously blemished by other means.

Texture refers to the tenderness and freedom from mushiness of the carrots (after cooking) and the degree of freedom from coarse or fibrous units.

FOOD FACTS

VIII - CAULIFLOWER, FROZEN

Frozen cauliflower is prepared from fresh heads of the cauliflower plant by trimming, reducing the heads to clusters through both mechanical and hand cutting, blanching and freezing. Six pounds of fresh cauliflower is the equivalent of one two-pound box of frozen product.

Cauliflower is packed 12/2-lb. boxes to the master carton. U.S. Grade Standards are A and B and the grade reference is CFR 7 Part 52.721.

Factors of Quality. In addition to the factors of grade shown below which are rated, frozen cauliflower must possess similar varietal characteristics and have good flavor and odor (for Grade A). Good flavor and odor means that the product after cooking has good characteristic, normal flavor and odor and is free from objectionable flavors and odors of any kind.

<u>Factor</u>	<u>Score Points</u>	<u>Grade B* Minimum</u>
Color	40	28-33
Defects	40	28-33
Character	20	14-16

*Product that scores in these ranges cannot be graded above Grade B regardless of total score.

Grade A cauliflower must score at least 85 points and Grade B must not score less than 70 points.

Color refers to the characteristic white to light cream color over the tops and the characteristic green color or bluish tint on the branches and greenish yellow to light green modified leaves (or bracts).

Absence of Defects refers to the degree of freedom from poorly trimmed clusters, and small clusters, from damaged and seriously damaged clusters and small clusters and detached fragments, and from other defects which detract from the appearance or edibility of the product.

Character refers to the development, texture, and degree of freedom from ricey and fuzzy units.

Frozen cauliflower is available cooked, au gratin style. Cooked cauliflower is packed in disposable steam table trays. To serve, simply thaw in a refrigerator for 24 hours and heat in an oven to an internal temperature of 200°F.

Cauliflower, Breaded

This product consists of cauliflower florets, approximately 5/8 to 1" diameter, which are lightly breaded in a cheese flavored or delicately seasoned batter and deep fried. The florets usually contain approximately 25% breading. Breaded cauliflower can be used for appetizers, snacks or as a vegetable dish. There are approximately 75 pieces per pound. Breaded cauliflower is packed in 4-lb. cartons, 6 to the case.

Corn-on-the-Cob

Colors of frozen corn-on-the-cob are (1) yellow (golden) or (2) white.

Frozen corn-on-the-cob is available in two sizes: pieces of ears about 3" in length or whole ears or larger pieces about 6" in length (5-1/2 to 6"). Ears 3" in length are packed in 96 to the carton and 6" ears are packed 48 to the carton.

U.S. Grade standards for corn-on-the-cob are A and B.

Factors of Quality. Frozen corn-on-the-cob is graded according to the following factors and score points along with the limiting rule points:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	16-17
Uniformity of Size	10	8
Development	10	8
Defects	30	24-26
Tenderness & Maturity	30	24-26

Grade A frozen corn-on-the-cob must possess similar varietal characteristics and have good flavor and odor. The ears must have good color, are at least reasonably uniform in size, are reasonably well developed, are practically free from defects and are tender. The corn must score not less than 90 points.

Grade B frozen corn-on-the-cob is composed of ears with similar varietal characteristics and which have at least reasonably good flavor and odor. The ears must have at least reasonably good color, may lack uniformity and development, are at

least reasonably free from defects and are at least reasonably tender. The corn must score not less than 80 points.

Color is evaluated immediately after the product has been water-thawed to the extent that the outer surfaces are substantially free from ice crystals. Color refers to the uniform, bright color and the freedom of "off-variety" kernels.

Uniformity of size is based on the variations in length and diameter of the ears.

Development refers to the extent the ears are filled with corn kernels and the pattern arrangement of such kernels.

Defects refers to the degree of freedom from such defects as crushed and broken kernels, blemished kernels, poorly trimmed ears, attached stalk, husk and dark or readily noticeable silk.

Tenderness and Maturity refers to the stage of maturity and tenderness of the ears.

Corn, Whole Kernel

This product is available in white and yellow style. One of the factors of grade of cut corn is "maturity and tenderness". This factor accounts for half of the total points in determining grade (see below). The immature (tender) kernels in the milk stage are Grade A, while more mature kernels are Grade B. However, the more mature corn with a higher percentage of starch may hold up longer on a steam table. Some packers offer a product destined just for a steam table; it is called AAB Grade, which means Grade A for everything but maturity. AAB is not a USDA Grade. Frozen whole kernel corn is packed in 20-lb. bulk or 12/2-1/2-lb. cartons to the case. U.S. Grade standards are A, B and C.

Factors of Quality. Frozen whole kernel corn is graded according to the following factors and score points along with the limiting rule points:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule*</u>	<u>Grade C Limiting Rule</u>
Color	10	8	6-7
Absence of Defects	40	32-35	28-31
Tenderness & Maturity	50	40-44	36-39

*Product that scores in these ranges cannot be graded higher than this grade regardless of total score.

Grade A frozen whole kernel corn must possess similar varietal characteristics and good flavor and odor. The product also be tender, have good color,¹ be practically free of defects and score at least 90 points. Grade B frozen whole kernel corn must be reasonably tender, have reasonably good color,² be reasonably free of

1. Grade A corn may have reasonably good color if the total score is not less than 90 points.

2. Grade B corn may possess fairly good color, scoring not less than 7 points if the total score is not less than 80 points.

defects and score not less than 80 points. Grade C frozen whole kernel corn must possess the above characteristics but may possess a fairly good flavor and odor, be fairly tender, possess a fairly good color, be fairly free of defects and score not less than 70 points.

Color of frozen whole kernel corn refers to the uniform color typical of tender sweet corn, the brightness of the kernels and the freedom of "off-variety" kernels.

Absence of defects refers to the degree of freedom from pieces of cob, husk, silk or other harmless extraneous vegetable matter; pulled kernels, ragged kernels, crushed kernels, or loose skins; and damaged or seriously damaged kernels.

Tenderness and maturity refers to the stage of maturity of the kernels. Those kernels in the milk or early cream stage of maturity have tender texture as compared with kernels in the early dough or dough stage of maturity.

Corn, Mexican

This product, which is sometimes called Chuck Wagon, consists of approximately 75% corn, 10% sweet onion and 15% chopped red and green peppers. Frozen Mexican corn is bulk packed in 20-lb. or 2-1/2-lb. cartons packed 12 to the case. There are no U.S. Grade standards for this mixture, but packers base the grade on the individual vegetable.

Greens refers to the leaves cut from several plants, i.e., collard, mustard, turnip, kale, and greens other than spinach. Frozen greens are available whole leaf, sliced (diagonally cut) or chopped. Turnip greens may also be packed with diced turnips at a ratio of one pound of diced turnips to two pounds of greens. Frozen greens are packed 12/3-lb. cartons to the case. U.S. Grade standards are A and B.

Factors of Quality. Frozen leafy greens are graded according to the following factors and score points along with the limiting rule:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	14-16
Absence of Defects	40	28-33
Character	40	28-32

Grade A leafy greens possess good flavor and odor, good color, good character and are practically free from defects. The product must score not less than 85 points. Grade B leafy greens possess a fairly good flavor and odor, a reasonably good color, reasonably good character and are reasonably free from defects. The product must score not less than 70 points.

Color refers to the uniform color that is characteristic of the variety.

Absence of defects refers to the freedom from grit, sand or silt, seed stems, roots, grass and weeds, and damage as indicated by yellow, brown or other discoloration.

Character refers to the tenderness and texture of the leaves and stems or portions of the leaves and stems. The degree of freedom from coarse or tough leaves and stems, or tough portions of leaves and stems, and the degree to which the appearance may be affected by ragged and torn portions of leaves and stems are considered under this factor.

FOOD FACTS

VIII - OKRA, FROZEN

Frozen okra is available as whole baby okra, or cut in approximately 1/2" lengths. Both styles may be served as vegetables, but the cut is normally used in soups and stews. Both the whole and the cut are available IQF. Cut okra is available in 12/3-lb., 6/5-lb. and 20-lb. cartons. Whole baby okra is available in 12/2-1/2-lb. and 20-lb. cartons. U.S. Grade standards for frozen okra are A and B.

Factors of Quality. Frozen okra is graded according to the following factors and score points along with the limiting rule points:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	30	24-26
Defects	40	32-35
Character	30	24-26

Grade A frozen okra:

- (1) Possesses similar varietal characteristics in all styles,
- (2) Has good flavor and odor,
- (3) Has good color,
- (4) Is practically free from defects,
- (5) Has good character, and
- (6) Scores not less than 90 points.

Grade B frozen okra:

- (1) Possesses similar varietal characteristics in the whole style,
- (2) May not possess similar varietal characteristics in the cut style,
- (3) Has normal flavor and odor,
- (4) Has reasonably good color,
- (5) Is reasonably free of defects,
- (6) Has reasonably good character, and
- (7) Scores not less than 80 points.

Color of frozen okra refers to the brightness, uniformity of color and varietal characteristics.

Defects refers to the degree of freedom from insignificantly blemished units, blemished units, seriously blemished units, harmless extraneous material, poorly trimmed units, excessively trimmed units, small pieces in whole okra, small or damaged pieces, deformed pods, pathological or insect injury, or the presence of sand, grit or silt.

Character refers to the development of pods and seeds and the degree of freedom from tough fiber.

Okra, Breaded

This product is prepared from cut okra which is lightly breaded with a seasoned cornmeal or batter and deep fried. The product usually contains less than 25% breading. There are approximately 80 to 90 pieces per pound. Frozen breaded okra is packed in IQF bulk 20-lbs. to the carton or 12/2-lb. or 6/4-lb. cartons to the case. There are no U.S. grade standards for breaded okra, however, because of the value added by breading, packers generally use Grade A product for processing breaded okra.

Onion Rings, Extruded

This product is usually made from a combination of both fresh and dehydrated minced onions that are extruded, battered and breaded. These onion rings are approximately 55-62 percent onion and 38-45 percent tempura batter and breading. The product is available both raw, which requires cooking in deep fat, and cooked, which can be heated either in an oven or a deep fryer. According to the processors, the precooked onion ring is by far the more popular with schools.

Since the product is formed mechanically, the size, weight and count will always be the same. A 1/2 ounce ring (32 rings per pound), approximately 3/8 inch thick, is considered standard in the industry.

Onion Rings, Natural, Breaded

Natural raw breaded onion rings are prepared from sliced onion bulbs, separated into rings, coated with batter or breading, and may or may not be prefried in a suitable fat or oil.

Two types of frozen breaded onion rings are available made from fresh natural onions:

- (1) "French fried" onion rings that have been deep fried in a suitable fat or oil prior to freezing, and
- (2) "Raw breaded" onion rings that have not been oil blanched or cooked prior to freezing.

Natural onions are sliced in various thicknesses - 5/16, 3/8, 5/8 and 1/2 inch and are separated into rings. The amount of breading will vary with the surface area of the slice (from 45 to 65 percent). The thicker slices will take up more breading than the thinner slices. Because this is a natural product, the number of slices per pound will vary. A 3/8 inch thick ring with roughly 26-32 rings per pound is the most common, however, steak houses usually prefer a thicker ring, i.e., 1/2 inch with only 10-13 rings per pound.

Pack. Both extruded and natural rings are packed in 2-lb. boxes usually 4 to 8 to the master carton. Portion control rings are also available packed 24/3 oz. There are approximately 6 rings per 3-oz. package.

Grades of breaded onion rings are A and B. This standard was written in 1959 - long before the extruded product became available, however, USDA officials say that the standard is applicable to both products as well as the raw and french-fried styles.

Factors of Quality. U.S. Grade Standards for breaded onion rings (raw and cooked) are Grades A and B. Onion rings are graded according to factors that are not rated by score points.

The factors not rated by score points include (1) varietal characteristics and (2) flavor. The factors of grade for breaded onion rings (raw and cooked) and the score points along with the limiting rule are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade A Minimum</u>	<u>Grade B Minimum</u>
Color	30	25*	21
Defects	40	34	28**
Character	30	26*	21

* Grade A onion rings may score 21-24 points in these categories provided the total score is not less than 85 points.

**Onion rings that score 28-33 points may not be rated higher than Grade B regardless of the total score. Grade B onion rings must have a total score of not less than 70.

Color refers to the relationship of the color of frozen breaded onion rings to the characteristic cream to golden color typical of properly frozen onion rings. Color also refers to whether the product is bright and uniform and whether after heating, the units vary markedly from the dominating color.

Defects refers to the degrees of freedom from harmless extraneous vegetable material, dark carbon specks, imperfect rings and from blemished units.

Character refers to the crispness of the product after heating, and appearance and eating quality, the absence of cracked or unbreaded areas, oily, soggy or dry units; and the succulence and tenderness of the product.

Peas of various genera, types and varieties are closely related to beans. There is no sharp demarcation in the use of the words pea and bean. In some countries, certain kinds of peas may be called beans and visa versa. The majority of plants and their pods and seeds that are classified as peas are of the genus "Pisum" and those called beans are of the genus "Phaseolus" but this may not be the only difference.

Many years ago, most pea varieties had smooth skins and were grown to full maturity and dried. The skins did not wrinkle because they had a very high starch content and they lost little weight. In England, these peas were synonymous with soups and porridges.

During the 1700's, French horticulturists developed peas of "wrinkled-skin" character. Because the high sugar and low starch content made them sweet and more tender, they could be eaten and enjoyed fresh without drying. Later British horticulturists developed wrinkled varieties even further. "Pea parties" were considered fashionable for royalty, but even the possession of these peas was grounds for arrest for commoners. The wrinkled-skin variety became known as the English pea or garden pea as opposed to the starchy field pea.

The common garden pea, of which there are two general types, is one of the most widely used vegetable in North America. The type which is labeled "Early Pea" is produced from the Alaskan or other smooth skin varieties. The type commonly called "Sweet Pea" is derived from sweet, wrinkled varieties. Sweet peas are more oblong in shape, larger and mature a little later (late June or early July) than early peas.

There are many varieties of sweet peas. Some grow better in one region and others grow better in another. While some varieties, such as the Perfection type, are preferred for freezing, others are best suited for canning. The sweet peas are not usually frozen because they have such thin skins but both types may be canned. Some varieties are used for drying.

Factors of Quality. Grades of frozen green peas are A, B and C. Frozen peas are evaluated according to factors of quality that are not rated by score points and factors that are rated by score points.

The factors of quality not rated by score points include (1) varietal characteristics and (2) flavor. The factors of quality for frozen peas, the score points and the limiting rule are as follows:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	20	16-17	14-15
Defects	40	32-35	28-31
Tenderness & Maturity	40	32-35	28-31

Grade A peas must score not less than 90 points, Grade B not less than 80 points and Grade C not less than 70 points.

Color refers to the relationship of the color of frozen peas to peas with bright, uniform, good green color that is typical for the variety, the affect of peas that vary markedly from the uniform color, the percentage of peas that may be blond or cream colored or otherwise seriously detract from overall appearance.

Defect refers to the degree of freedom from harmless extraneous vegetable material, pieces of peas, blemished peas, seriously blemished peas and other defects which affect the appearance or eating quality of the product.

Tenderness and maturity refers to the degree of maturity of frozen peas based on the brine flotation test¹ or the tenderometer test and as reflected in the tenderness determined on the cooked product.

Peas, Field

All peas are believed to have descended from wild plants that came from southern Europe and southwestern Asia. They were known and used by the Chinese in 2000 B.C. and the Bible mentions peas. Peas were brought to this country by the very early settlers in the 16th century. The colonists planted them in all parts of the country.

Frozen field peas may be from two sources:

- (1) Peas may be picked in the field at the peak of tenderness using the same type of equipment that is used for harvesting green peas, transported to a processing plant freezer, where they are blanched and frozen;
- (2) Peas may be dried in the field, thrashed to remove the peas from the vine and much of the debris, brought to a plant where they are cleaned and bagged. The dried peas are cleaned again prior to rehydrating and sorting. The rehydrated peas are then blanched and frozen.

Field peas, sometimes called southern peas or cow peas, is a broad family term which includes several types such as blackeye, crowder, cream and purple hull, each of which includes several varieties. Field peas are available as frozen peas or with snaps. "With snaps" means that about 5% of the young immature pods cut into approximately 1/2" pieces are purposely included. Frozen field peas are packed in 2-1/2 and 3-lb. boxes, 12 to the case. U.S. Grade standards are A and B.

1. The brine flotation test utilizes salt solutions of various specific gravities to separate peas according to the maturity.

Potatoes, French Fries

The french fried potato is said to have been introduced to this country by Benjamin Franklin. Ben was visiting in France when he was served a meal which consisted in part of approximately 20 different types and styles of potatoes. The french fried potato struck his fancy to such an extent that not only did he bring back the method of cooking, but introduced it to the White House. Frozen french fries had to await improved freezing techniques introduced in the middle to late 40's before they captured the fascination of the country.

French fried potatoes are available in numerous styles as illustrated in the accompanying picture and Table.

Frozen french fried potatoes are classified by length as follows:

Extra Long	- 80% or more 2" in length or longer
	- 30% or more 3" in length or longer
Long	- 70% or more 2" in length or longer
	- 15% or more 3" in length or longer
Medium	- 50% or more 2" in length or longer
Short	- Less than 50% 2" in length or longer
Line Flow	- No specification of size.

In addition to regular cuts, french fries are available in several cut variations: crinkle cut slices, cross cut slices, crinkle, criss-cross slices, and "natural cut" (wedges of potatoes with the skin on). Also available is a "potato skin" which is a cored half-potato with about 1/4" residual. Potato skins are used for stuffing with various combinations. French fried potatoes are packed 6/5-lb. cartons to the case. Grades of frozen french fried potatoes are A and B.

Factors of Quality. The grade of frozen french fried potatoes is ascertained by considering:

- (1) The factor of flavor which is not scored
- (2) The ratings for the factors of quality which are scored and the limiting rules which may be applicable.

The factors of quality which are scored, the score points and the limiting factors are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	30	24-26
Uniformity of Size & Symmetry	20	16-17
Defects	20	16-17
Texture	30	24-26

Grade A potatoes must score a minimum of 90 points and Grade B must score at least 80 points.



FOOD FACTS

VIII - PEAS, FROZEN

Frozen field peas and blackeye peas are not graded on score points as other peas but on Acceptable Quality Level (AQL).

Factors of Quality The grade of frozen field peas and black-eye peas is based on their:

- (1) bright overall appearance
- (2) flavor and odor
- (3) freedom from grit
- (4) character (maturity and tenderness)
- (5) weight of broken peas
- (6) the following defects must be within the limits specified:
 - Dissimilar varieties
 - Harmless extraneous material
 - Blemished
 - Shriveled
 - Color attributes

FOOD FACTS

VIII - PEAS, & CARROTS, FROZEN

Peas and carrots are frozen at harvest time and mixed at a later date. A common ratio is 60 percent by weight of peas and 40 percent diced carrots. However, the ratio may go as low as 50-50 or 75 percent peas and 25 percent carrots. Carrot dices are predominantly 1/4 inch to 3/8 inch cubes. The quality of a pack depends on the quality of the peas and carrots used. Preferred packs have a higher ratio of peas to carrots.

FOOD FACTS

VIII - PEAS, & SMALL ONIONS, FROZEN

Peas and small onions are sometimes packed together, usually frozen, in 2-1/2 pound film bags or 20 pound boxes. A good ratio is 80 percent peas and 20 percent onions.

FOOD FACTS

VIII - POTATOES, FROZEN

The potato originated in South America. Most botanists and plant breeders agree that the white potato comes from a species found in Peru and Bolivia. The Inca Indians grew potatoes in the Andes mountains where it was too cold to grow corn and wheat. The potatoes were broken into pieces and dried in the sun. A light flurry substance called "chuno" was made from the dried potato and used to make bread.

Spanish explorers introduced potatoes to Spain in 1550. From Spain, potatoes were taken to Italy, then England and Ireland. The potato grew so well in Ireland that it was soon adopted as their main food. Thus, the white potato became known as the "Irish potato" when Irish immigrants brought potatoes with them where they settled in New Hampshire in 1719. However, the "Irish potato" had probably already been introduced into Virginia in the early 1600 from England via Bermuda.

Potatoes, French Fries

The french fried potato is said to have been introduced to this country by Benjamin Franklin. Ben was visiting in France when he was served a meal which consisted in part of approximately 20 different types and styles of potatoes. The french fried potato struck his fancy to such an extent that not only did he bring back the method of cooking, but introduced it to the White House. Frozen french fries had to await improved freezing techniques introduced in the middle to late 40's before they captured the fascination of the country.

French fried potatoes are available in numerous styles as illustrated in the accompanying picture and Table.

Frozen french fried potatoes are classified by length as follows:

Extra Long	- 80% or more 2" in length or longer
	- 30% or more 3" in length or longer
Long	- 70% or more 2" in length or longer
	- 15% or more 3" in length or longer
Medium	- 50% or more 2" in length or longer
Short	- Less than 50% 2" in length or longer
Line Flow	- No specification of size.

In addition to regular cuts, french fries are available in several cut variations: crinkle cut slices, cross cut slices, crinkle, criss-cross slices, and "natural cut" (wedges of potatoes with the skin on). Also available is a "potato skin" which is a cored half-potato with about 1/4" residual. Potato skins are used for stuffing with various combinations. French fried potatoes are packed 6/5-lb. cartons to the case. Grades of frozen french fried potatoes are A and B.

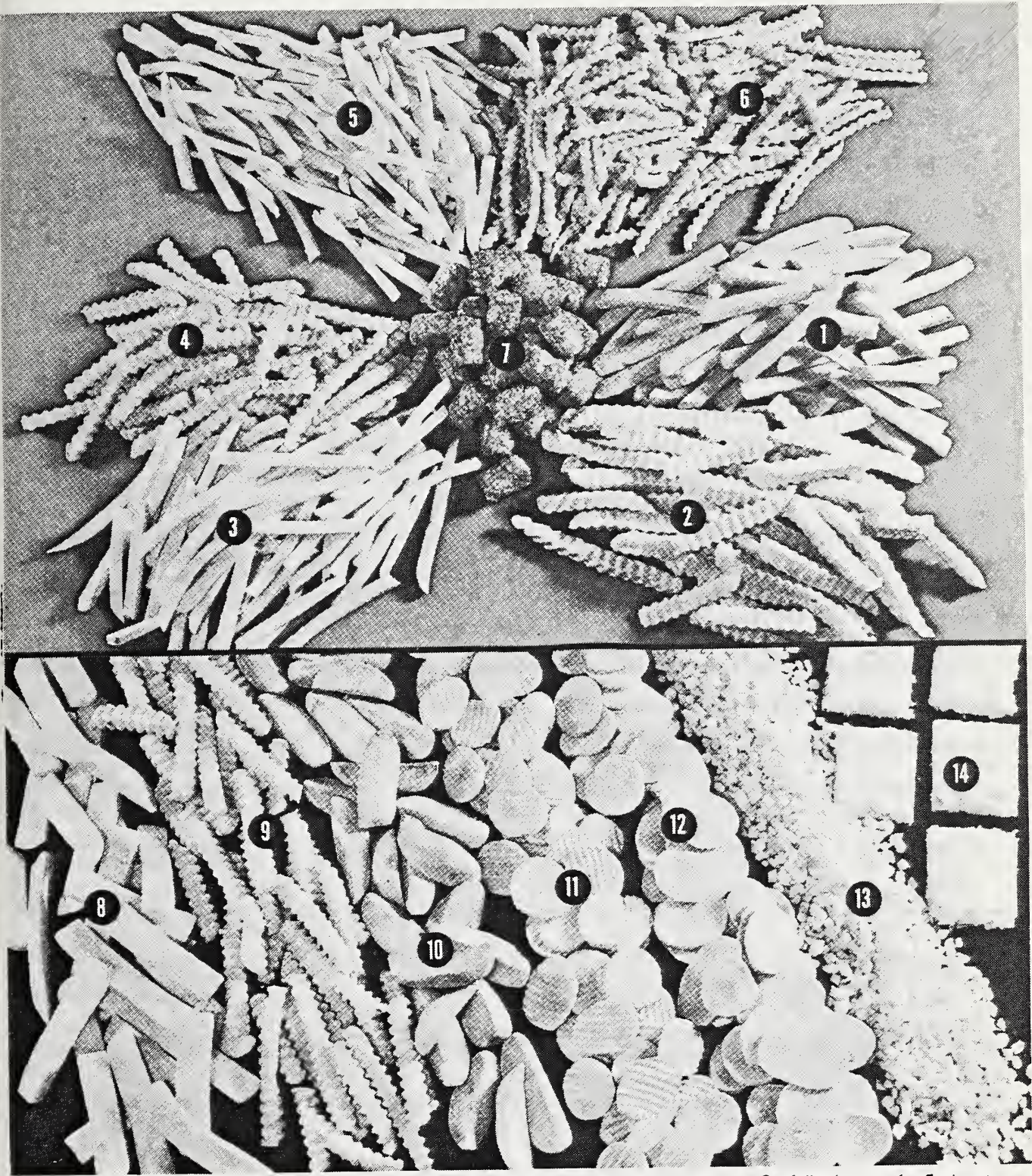
Factors of Quality. The grade of frozen french fried potatoes is ascertained by considering:

- (1) The factor of flavor which is not scored
- (2) The ratings for the factors of quality which are scored and the limiting rules which may be applicable.

The factors of quality which are scored, the score points and the limiting factors are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	30	24-26
Uniformity of Size & Symmetry	20	16-17
Defects	20	16-17
Texture	30	24-26

Grade A potatoes must score a minimum of 90 points and Grade B must score at least 80 points.



See following page for Explanation

FRENCH FRIES**PRODUCT INFORMATION AND RECOMMENDED PREPARATION**

<u>PRODUCT TYPE</u>	<u>PACKAGE SIZES</u>	<u>RECOMMENDED PREPARATION</u>
1. French Fries — Regular Straight-cut	5 lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
2. French Fries — Regular Crinkle-cut	5 lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
3. French Fries — Thin Straight-cut	5 lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
4. French Fries — Thin Crinkle-cut	5 lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
5. French Fries — Shoestring Straight-cut	4½ lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
6. French Fries — Shoestring Crinkle-cut	4½ lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
7. Potato Rounds — Shredded potatoes extruded into bite-size log shapes.	5 lb bags or boxes, 6 to a case	Deep fry or oven finish equally well.
8. French Fries — Thick Steak Straight-cut	5 lb bags or boxes, 6 to a case	Deep frying preferable; oven finishing acceptable.
9. French Fries — Thick Steak Crinkle-cut	4½ lb bags, 6 to a case	Deep frying preferable; oven finishing acceptable.
10. French Fries — Thick Steak Wedge-cut	5 lb bags, 6 to a case	Deep frying preferable; oven finishing acceptable.
11. Potato Slices — Crinkle-cut	5 lb bags, 6 to a case	Deep fry or use as an ingredient in oven-finished recipes.
12. Potato Slices — Straight-cut	5 lb bags, 6 to a case	Deep fry or use as an ingredient in oven-finished recipes.
13. Hash Browns — Southern Style Diced	2 lb bags, 12 to a case 5 lb bags, 6 to a case	Pan fry or use as an ingredient in oven-finished recipes.
14. Hash Browns — Shredded	1½ to 3 oz portions, packed in 15 to 18 lb cases	Griddle or pan fry; or follow special oven-finishing directions on Card No. 4.

HANDLE CAREFULLY . . . a case of French fries dropped 3 feet may have 35% breakage. Broken pieces lower the quality of the finished product.

STORE . . . at zero degrees or lower until ready to use.

YIELD . . . varies slightly depending on whether potatoes are deep fried or oven finished. When deep fried, frozen French fries give approximately a 75% yield . . . that is, 18¾ lbs or 100 3-oz servings from 25 lbs of frozen product.

Fry Color Type. The USDA lists the term "fry color" in reference to the color change which occurs in the potato units solely because of the frying process. Fry color ranges include Extra Light, Light, Medium Light, Medium and Dark. The USDA has issued USDA Color Standards for frozen french fried potatoes. Information about these color standards and their availability may be obtained from:

Processed Products Standardization and Inspection Branch,
Fruit and Vegetable Division,
AMS, U.S. Department of Agriculture,
Washington, DC, 20250.

Uniformity of Size and Symmetry refers only to slices, dices and whole potatoes. The size and symmetry of strips is considered under length designation.

Defects is concerned with imperfections in the product, such as necrosis, crushed units, discolored eyed, callous areas and discolorations which may affect appearance or edibility.

Texture is evaluated within 3 minutes after the product has been heated and while it is well above room temperature.

Extruded French Fried Potatoes: This product is a "french fry" which is produced from mashed potatoes. The extrusion process permits the length of the french fry to be precisely controlled. The texture of the extruded product is possibly more firm than the cut potato and usually cooks to a golden brown. Extruded potatoes may be enriched with Vitamin C. This type of potato is available for oven cooking. This product is packed in 6/4-lb. cartons to the case. A major packer of this product, Basic American, has gone out of business.

Compressed French Fries

This is a family of products are prepared from shredded potatoes, often with seasonings and/or onions added and/or enriched with Vitamin C. Some are oil blanched, ready for reheating in the deep fat fryer or oven. Shredded products are available in different sizes and shapes and with different names, i.e., Tater Tots, Tater Puffs, etc. Compressed potatoes for french frying are packed 6/5-lb. cartons to the case and there are no U.S. Grade standards.

Although there are several different types of squash, which belong to the pumpkin family, the yellow crookneck (or summer squash) is the only one frozen in quantities commercially. This product is marketed in sliced form.

Summer Squash

Most sliced, yellow, crookneck squash for freezing is grown in Texas or California and is packed in 2-1/2 or 3-lb. boxes, 12 to the carton or IQF 20 pounds to the carton. A popular variety is Gold Bar, a bright yellow squash. A standard pack is cut from squash 2-1/2 inches in diameter, with slices 3/8 inch thick.

Factors of Quality. In addition to the following factors of grade that are rated by score points, frozen summer squash must also possess similar varietal characteristics. The product is graded on flavor and odor, which means that the squash (after cooking) has a characteristic normal flavor and odor and is free of objectional flavors and objectional odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	14-16
Absence of Defects	40	28-33
Character	40	28-33

Grade A squash must score at least 85 points and Grade B, at least 70 points.

Color refers to the color of frozen yellow squash compared to squash that is bright and typical of young and tender squash of similar varietal characteristics that has been properly processed.

Absence of Defects refers to the degree of freedom from harmless extraneous vegetable material, sand, grit or silt, poorly cut units, units damaged by mechanical injury, and units damaged by discoloration, scars, insect injury, or units damaged by other means.

Character refers to the fleshy texture and degree of development of the seeds.

Squash, Cooked, Breaded

This product is made from either yellow or zucchini squash slices cut 3/16 inch thick and in diameters which range from 7/16 to 1-5/8 inches. The product is also available in stick form. About 25% of the weight of the finished product is seasoned breading. Breaded cooked squash is packed 20-lbs. bulk or 12/2-lb. or 6/4-lb. cartons per case. There are no U.S. Grade standards.

Squash, Zucchini

Zucchini is a bright, green, slender (Italian narrow type) summer squash. This product is available in 2-1/2-lb. boxes, 12 to the case. USDA Grade Standards are written for all summer squash, therefore, the preceding factors of quality for yellow crookneck squash apply to zucchini squash.

Squash, Cooked

Winter, or Fall type, squash is cooked before freezing. The product is pureed, removing the seed and fiber and then completely cooked before freezing. Cooked squash is packed in 4-lb. boxes, 6 to the master carton. U.S. Grade standards are A and B.

Factors of Quality. The factors of grade, the score points and the limiting factors are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Consistency	30	21-25
Color	20	14-16
Finish	20	14-16
Absence of Defects	30	21-24

Grade A cooked squash must score a minimum of 85 points and Grade B, 70 points.

Consistency refers to the amount of separation of the warmed mixed squash after emptying from the container.

Color refers to the typical uniform color, free from discoloration, due to oxidation.

Finish refers to the texture of the product and freedom from hardness of squash particles.

Absence of Defects refers to the degree of freedom from sand, grit or silt or pieces of seed, fiber and from off-color particles.

Succotash is a mixture of corn, lima beans, vegetable soybeans or green or wax beans. If soybeans or green or wax beans are used, the product is designated as "frozen soybean succotash" or "frozen green bean (or wax) bean succotash" as the case may be.

The proportion of the mixture of ingredients consists of the following:

<u>Ingredient</u>	<u>Percent by Weight</u>
Corn, white or green	50-75
Lima beans, fresh	25-50
Soybeans, vegetable	25-50
Green or wax beans	25-50

A popular pack consists of 70 percent corn and 30 percent lima beans. U.S. Grade standards are A and B. Succotash is packed 12/2-1/2-pounds.

Factors of Quality. In addition to the factors listed below which are rated, succotash must be considered for varietal characteristics, flavor and odor which are not rated.

<u>Factor</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Color	30	24-26	21-25*
Absence of Defects	30	24-26*	21-23*
Tenderness	40	32-35	28-31*

*Product that scores in these ranges cannot be graded higher than this grade regardless of total score.

Grade A succotash must score at least 90 points and Grade B, 80 points.

Color refers to the overall appearance of the product and general brightness of the vegetables.

Absence of Defects refers to the degree of freedom from extraneous vegetable matter, damaged and seriously damaged units and from other defects.

Tenderness means that the vegetables, prior to cooking, are in the early state of maturity and the product is tender after cooking

FOOD FACTS.

VIII - VEGETABLES, MIXED, FROZEN

Most mixed vegetables for freezing are packed in the Northwest. Each product is frozen individually after harvest and mixed when all products are available. Mixed vegetables may consist of three to five vegetables as primary ingredients. The vegetables are as follows:

- cut beans, green or wax with cuts measuring from 1/2" to 1-1/2" in length
- lima beans of any single variety
- diced carrots which measure from 3/8" to 1/2"
- whole kernel sweet corn, yellow or white
- peas, early or sweet variety

The following proportions are recommended by the USDA: in a mixture of three, no one vegetable should exceed 40% by weight. In a mixture of four, no one vegetable should be less than 8% nor more than 35% by weight. In a mixture of five, no one vegetable should be less than 8% nor more than 30% by weight. These ratios exclude secondary vegetables such as green and red peppers which may be used in small amounts to garnish a pack. A typical pack consists of 30% diced carrots, 30% green peas, 22% cut corn, 10% 1/2" cut green beans, and 8% baby lima beans. Frozen mixed vegetables are packed 12/2-1/2-lb. cartons to the case or 20 pounds bulk. They are available as Grade A, B or C.

Factors of Quality. The grade of frozen mixed vegetables is ascertained by considering the factors of similar varietal characteristics and flavor and odor which are not scored and the respective ratings for color, absence of defects and character which are scored. Flavor and odor mean that the product and each basic vegetable after cooking has a characteristic normal flavor and odor, free from objectional flavors and odors of any kind. The factors of grade, the maximum score points and the limiting rule is shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	20	16-17	14-15
Absence of Defects	40	32-35	28-31
Character	40	32-35	28-31

Grade A mixed vegetables must score not less than 90 points, Grade B, 80 points, and Grade C not less than 80 points.

Color refers to the general brightness of all the combined vegetables and to the color of the lima beans.

Absence of Defects refers to the degree of freedom from harmless extraneous vegetable material, slightly, moderately or seriously damaged units and any other defects which detract from the appearance of the product.

Character refers to the texture, the maturity and the degree of development of the pods and seeds in the green or wax beans; the tenderness of the lima beans and the degree of freedom from stringy or coarse fibers in carrots; the tenderness and maturity or starchiness of the corn; the tenderness and maturity of the peas and the tenderness of the combined frozen mixed vegetables after cooking.

Other Mixed Vegetables

In addition to the 3 to 5 vegetables discussed above, packers have created a number of other types with diverse packer names and mixes as follows:

Winter Mix	cauliflower and broccoli;
Romano Bean Medley	Romano beans, zucchini squash, sliced carrots, cut cauliflower and red peppers;
Harvest Vegetables	yellow corn, fordhook lima beans, cut green beans and cut cauliflower;
Summer Vegetables	cut cauliflower, sliced carrots, cut green beans and sweet peas;
Country Mix Vegetables	yellow corn, cut broccoli and sweet red peppers;
Oriental Blend	french style green beans, cut broccoli, onion strips, sliced mushrooms and red bell peppers;

FOOD FACTS

VIII - VEGETABLE STICKS, FROZEN

Frozen vegetable sticks are a blend of extruded corn, carrots, onion and green beans formed into the shape of a stick, coated with a pastry batter and cooked. Vegetable sticks can be used as an appetizer or a side dish. They may be heated in a fryer or in an oven. Frozen vegetable sticks are packed 6/2-lb. poly bags to the case. There are no U.S. Grade standards for vegetable sticks, therefore, the product may vary somewhat from one packer to another.

FOOD FACTS

VIII - YAM PATTIES, FROZEN

Frozen yam patties are prepared from moist-fleshed varieties of the sweet potato. The potato is baked in a candied sauce and formed into patties. Two sizes are available: 1.5 oz. and 2 oz. Both sizes are available layer packed. The 1.5 oz. are packed 8 sheets of 28 per sheet or a total of 224 patties. There is no U.S. Grade standards or CFR reference so the product may vary from packer to packer.

FOOD FACTS

VIII - VEGETABLES, FROZEN, STORAGE AND CARE

Most frozen vegetables can be held at zero degrees F for about 12-14 months. Carrots and okra have a slightly longer storage life and corn on the cob can only be stored for about 9 months for best results.

Frozen vegetables can be cooked (or heated, if already cooked) from the frozen state. It is not necessary (nor desirable) to temper frozen vegetables in a cooler before cooking.

GROUP IX - FRUITS AND
VEGETABLES, CANNED

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IX - FRUITS & VEGETABLES, CANNED

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GRADES

Commercial grades of processed fruits, juices and vegetables (canned and frozen) encompass mainly packer-distributor grades as illustrated on the chart listed in the Frozen Fruit section. These grades follow rather explicitly the standards for grades as issued by the U.S. Department of Agriculture.¹

Each factor of grade is evaluated on the basis of score points necessary to qualify to reach grade, for example, 90 points for Grade A, 80 points for Grade B, etc. In some cases, there are rule factors in which the product must score so many points for individual factors of grade to be included in a certain grade.

In some instances packers may require a slightly higher point score than does the USDA regulations. For example, the USDA total point score for canned cut corn is 90, but a packer may require cut corn packed under his label to score 93 points to be labeled Grade A. Although scores for various factors of quality may vary between packers by a point or so, this does not necessarily indicate that some packers' grades, as listed on the packer grade charts, are superior to others. However, as could be expected, a packer may strive to upgrade the quality level of his product to give him a slight edge over the competition.

In addition to the A, B and C levels of grades shown on the packer grade chart, some packers offer a "Super label" which represents products with high grade scores which are derived from particular varieties or come from selected growing areas. These labels are generally recognized as superior and demand a higher price. They are purchased by proprietors of deluxe dining rooms who are looking for a menu edge (at any price).

The terms Grade A, Grade B and Grade C are used herein rather than the descriptive terms, Fancy, Choice, etc. For clarification the dual nomenclature is as follows:

<u>Grade</u>	<u>Fruits</u>	<u>Vegetables</u>
Grade A	Fancy	Fancy
Grade B	Choice	Extra Standard
Grade C	Standard	Standard

The USDA standards of grade also allow for a Grade D, or substandard grade, in most processed products. These grades, however, are not generally available commercially. If however, you are offered a Grade D product at an attractive price, it might be worthwhile to examine the opportunity carefully. For example, if green beans are downgraded into substandard because of excessive defects (stems, variable sizes, ragged cuts, etc.), the product might actually score a high Grade A in other points and represent a good buy particularly for serving from a steam table where one defective piece can be set aside. These products are normally sold under separate labels disassociated with the A, B and C labels.

1. See FNS Technical Assistance Manual "Directory of Information Sources".

FOOD FACTS

IX - CANNED FRUITS

In some canned fruit products, Grade B (Choice) is the highest quality level packed and marketed in the industry. The supply of Grade A, in some fruits, is not sufficient to provide a consistent amount of year-round supply. Canned fruits available primarily as Grade B are apricots, figs, fruit cocktail, grapes, peaches, pears, plums and sliced pineapple. Canned fruits available as Grade A are apples, cranberries, cherries, pineapple (except sliced) and prunes.

FOOD FACTS

IX - APPLES, CANNED

Apples, Sliced

Sliced apples are segments of apples cut longitudinally and radially from the core axis. For all practical purposes, there are three packs of sliced apples:

- A 6-1/2-lb. water pack (some packers use the juice from the product with water) with a drained weight of 96 ounces;
- A 6-1/2-lb. syrup pack with a drained weight of 100 ounces; and
- A 7-lb. (or heavy) syrup pack with a drained weight of 104 ounces.

Packers use the same amount of apples for both of the 6-1/2 lb. packs, but the fruit picks up the sugar from the syrup, resulting in a higher drained weight. Even through the primary use of sliced apples is for dessert items, pies and cobblers, the water pack is by far the most versatile and much wider used of the three.

A number of different varieties of sliced apples are processed in various parts of the country. Varietal differences are not mixed when processed and different brands should not be mixed when preparing dishes from sliced apples. A favorite variety may be requested for specific purposes.

Canned apple slices are packed 6/#10 cans to the case and U.S. Grade standards are A and C. Grade A is common with this product. The Grade reference is CFR 7 Part 52.2161.

Factors of Quality. In addition to the following factors of grade listed below which are rated by score points, the grade also requires that the product have a normal flavor and odor and consist of similar varietal characteristics which are not scored.

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Limiting Rule</u>
Color	20	14-16
Uniformity of Size	20	—
Absence of Defects	20	—
Character	20	28-33

Color refers to the uniform bright color of the slices, internally and externally, which is characteristic of apples of similar varieties.

FOOD FACTS

IX - APPLES, CANNED

Uniformity of Size refers to the degree of wholeness and the uniformity of the thickness of the slices.

Absence of Defects refers to the degree of freedom from: harmless extraneous matter, damaged or seriously damaged slices and carpel tissue.

Character refers to the texture of the slices and their conformation without material softening or disintegration.

Flavor and Odor. Normal flavor and odor means that the product is free from objectionable flavors and objectionable odors of any kind.

Apples, Other

Dessert Pieces or Chips are less expensive than slices. Chips are not as uniform in size as slices but may be satisfactory for making pies or cobblers. There are no U.S. Standards of Grade for apple pieces or chips.

Apples, Whole are unpeeled apples selected for good color, round and symmetrical shape, and good character after baking are also available. There are no U.S. Standards of Grade for whole apples.

Apple-Rings, Spiced are produced from cored whole apples that are spiced and artificially colored red or green. The apples are sliced and the rings graded according to size for uniformity. Ring counts in a Number 10 can vary from 60 to 70, 70 to 85, 85 to 100 and over 100. Spiced apple rings are packed in heavy syrup. There are no U.S. standards of Grade. Packers determine quality on basis of color, uniformity and ring breakage.

FOOD FACTS

IX - APPLESAUCE, CANNED

Applesauce is prepared from chopped or comminuted apples which may or may not have been peeled and cored, and may be artificially or naturally colored. Applesauce is made by blending different varieties to give the best color, flavor and consistency. Like apple juice, a good balance of flavor is the result of the proper brix/acid ratio. The regular texture (comminuted) has a crisp, not lumpy, taste. Chunky (chopped into small pieces) has a high percentage of apple chunks and any fine particles should not affect the appearance or eating quality. Sugar may or may not be added to applesauce, thus there are various degrees of sweetness found in this product, i.e., sweetened, slightly sweetened and unsweetened.

A No. 10 can of applesauce has a net weight of approximately 108 ounces. Canned applesauce is packed 6/#10 cans to the case and U.S. Grade standards are A and B. The Grade reference is CFR 7 Part 52.331.

Factors of Grade. The factors of grade, score points and limiting rule points are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	16-18
Consistency	20	16-19
Finish	20	16-18
Absence of Defects	20	16-19
Flavor	20	16-19

Color refers to the uniformity and brightness of the applesauce color. To meet U.S. Grade A, the color should be typical of the varieties of apples used and may range from a white color to a light golden color. In addition, the color should be free from tinges of pink or gray and free from discoloration due to oxidation, scorching, or other causes, except from the addition of spicing.

Consistency refers to the flow characteristics of the product and to the degree of separation of free liquid. Consistency is tested utilizing the standard USDA Flow Sheet No. 1 and a well mixed sample of applesauce. Maximum tolerances for the consistency level allowable in each grade are:

	<u>Flow</u>	<u>Free Liquor</u>
Grade A Regular	6.5 cm.	0.7 cm.
Grade A Chunky	7.5 cm.	Slight
Grade B Regular	8.6 cm.	1.0 cm.
Grade B Chunky	9.5 cm.	Moderate

Finish refers to the texture and tenderness of the apple particles. With respect to regular applesauce, the division of the apple particles should be even, apple particles should be crisp upon eating, and the product should be free from a pasty or salvy texture. With respect to chunky style, there should be a high proportion of apple chunks present, and any fine apple particles that may be present should no more than moderately affect the appearance and/or eating quality of the product.

Absence of Defects refers to the degree of freedom from particles of seeds, discolored apple particles, peel, carpel tissue, stamens and other objectionable particles.

Flavor refers to the degree of excellence of the natural flavor and aroma of the apple ingredient; to the apparent relationship of acidity to sweetness; and to the freedom of undesirable flavors.

FOOD FACTS

IX - APRICOTS, CANNED

Apricots are produced in California. The fruit is tree-ripened and purchased by the packer on the basis of ripeness, quality, size and condition. The fruit is brought into a cannery where it is cut into halves and the pits removed. Much of the flavor of the apricot is in the skin, thus much of the pack is unpeeled. Unpeeled fruit is full-flavored, holds its shape and firmness and does not become mushy.

Apricots are especially useful in special diets such as diabetic, sodium controlled and in geriatric feeding because of their mild, juicy flavor and texture and color. They are also a good source of fiber and vitamin A.

Apricot halves are size-graded in #10 cans as follows: 75-90 count (number in a can), 110-130 count and 90-110 count. The vast majority of the fruit packed is halves, although some product is packed whole and some sliced. U.S. Grade Standards are B (the highest quality packed) and C.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned apricots must be considered for factors of varietal characteristics and flavor and odor which are not rated.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	20	16-17	14-15
Uniformity of Size & Symmetry	20	16-17	14-15
Defects	30	24-26	21-23
Character	30	24-26	21-23

Note: Uniformity of size is not a grading factor for sliced or solid pack varieties. To get total score, multiply by 100 and divide by 80.

Grade B apricots must score at least 80 points and Grade C must score not less than 70 points.

Color. The color refers to the characteristic color of the outer, uncut surfaces of the units, and the varying degrees of pale yellow areas, light greenish-yellow areas, and light green areas. To meet Grade B color, apricots must possess reasonably good color and the sample unit must be reasonably uniform in color. No more than 10% of the sample may have pale yellow or light greenish-yellow which exceeds one-half of the outer surface area.

Uniformity of Size and Symmetry. Uniformity of size and symmetry refers to the relationship by weight between the largest full size unit and the smallest full size unit. To meet Grade B, the weight variation between the largest and the smallest should not be more than 75%. Additionally, in halves, no more than 14% halves may be separated off the suture split of the apricot to meet U.S. Grade B minimum standards.

FOOD FACTS

IX - APRICOTS, CANNED

Defects. The factor of defects refers to the degree of freedom from pit material, loose pits, harmless extraneous material, short stems, peel, minor blemishes, major blemishes, and crushed or broken units. Maximum allowances for defects by grade base on a 50-unit sample are:

	<u>Grade B</u>	<u>Grade C</u>
Harmless Extraneous Material (# of pieces)	1	2
Short Stem (count)	3	5
Peel	3/4 sq in	1-1/4 sq in
Loose Pits	5	5
Pit Material	3	3
Crushed or Broken Units		
Whole	1	1
Halves	2	2
Blemished Units		
Halves-Total	10	20
Halves-Major	5	10
Whole-Total	10	20
Whole-Major	2	5

Character. The character factor refers to the degree of ripeness, the texture and tenderness of the apricots, and their tendency to retain their original conformation and size without disintegration.

FOOD FACTS

IX - CHERRIES, CANNED

Cherries, Maraschino

Maraschino cherries are made from sweet cherries. They are shipped in tanks of brine to brining plants. The brine, a solution of gaseous sulphur dioxide and water, cushion the berries and inhibits spoilage during transportation.

Brining. At the brining plants, the cherries are inspected and placed in larger tanks where they are held for approximately two months while they are bleached. The brining solution gives the cherries firmer texture and stronger stem attachment and loosens the meat from the pit. When the cherries turn to a pale golden color, they are assorted by size and pitted. They are then graded for color, absence of defects, size and presence of stem. Shipments of brined graded cherries are made to finishers in 250-pound poly-lined drums.

FOOD FACTS

IX - CHERRIES, CANNED

Finishing. Brined cherries are leached of brine in processing tanks. Color and sugar are added under controlled temperatures. When the cherries reach a 40-55 brix (sugar content) they are classified as maraschino cherries and an almond flavor is added. Green cherries are flavored with mint.

Whole red and green maraschino cherries, with and without stems, are packed in 1/2 and 1 gallon glass containers. They are sized according to their diameter in millimeters. A gallon of cherries, 17-17-1/2 mm in size will contain approximately 1,000 to 1,100 cherries; 19-20mm, from 650 to 800; and 20-22mm, from 500 to 650 cherries. Maraschino cherries are also packed as halves, chopped, sliced and crushed in 1/2, 1 and 5-gallon containers.

Red and green maraschino cherries are used as an ingredient and garnish to add appealing color and flavor to salads, desserts, sauces, fruit soups, breads, ice cream, beverages, meats and vegetables. Particularly, cherries with stems add glamour to almost any food. A major use of red maraschino cherries is for further processing of fruit cocktail and fruit mixes.

<u>Cherry Size</u>	<u>Gallon Count</u>
22 - 24mm	380 - 550
20 - 22mm	500 - 650
19 - 20mm	650 - 800
18 - 20mm	690 - 800
18 - 19mm	850 - 950
17-1/2 - 18mm	950 -1050
17 - 17-1/2mm	1000-1100
16 - 17mm	1100-1200

Although of relatively minor importance to restaurant operators, maraschino type cherries can also be purchased glazed and packed in sealed film bags, ready for use in food preparation. These are packed whole, halved, or in pieces. Whole cherries are packed 70 - 120 to the pound, depending on size.

Factors of Grade. The factors of grade, score points and limiting rule points are as follows. Grade A Maraschino cherries must score 85 points and Grade B, 75 points.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	14-16
Absence of Defects	40	28-33
Character	40	28-33

Maraschino cherries may also be graded "U.S. Combination" or "Seconds" if the following conditions are met:

- (1) Not less than 90 percent, by weight, of all the cherries possess at least reasonable good color and character and are free from misshapen cherries and cherries seriously damaged by mechanical injury and seriously blemished cherries; and
- (2) Unless otherwise specified, at least 50 percent by weight of all the cherries possess a good color and character and are free from blemished or seriously blemished cherries, misshapen cherries, and cherries damaged or seriously damaged by mechanical injury.

Color refers to the presence of a typical bleached sulfured cherry that has been properly colored using approved artificial coloring. The color should be from medium red to light red or medium green to light green. The color should be uniform throughout the lot.

Absence of Defects refers to the degree of freedom from misshapen cherries, cherries damaged or seriously damaged by mechanical injury, and cherries blemished or seriously blemished by mechanical injury, or cherries blemished or seriously blemished by discoloration, rain or solution cracks, bird pecks, pathological injury, insect injury or blemished by other means.

Tolerance levels for defects by grade level are:

<u>Grade</u>	<u>Total Defects</u>	<u>Including Not More Than Of Misshapen, Seriously Damaged and Seriously Blemished</u>
Grade A	10%	5%
Grade B	Unlimited	10%

Character refers to the firmness of the cherries and to the condition of the flesh to meet Grade A standards, 85 percent of the cherries must possess a firm fleshy texture, retain their approximate original shape, are not shriveled or watery and do not show more than slight collapsed areas of flesh.

Cherries, Red, Tart, Pitted

Red, tart, pitted cherries are prepared from mature red tart cherries from which the seeds or pits have been removed. The product is referred to as RTP cherries. Packing media may be water, fruit juice, or water and fruit juice; however, water pack is the most common. The principal use of RTP cherries is for preparing cobbblers and pies. The average drained weight of a No. 10 can is 72 oz. The product is packed 6/#10 cans per case. Red sour, pitted cherries are also packed in No. 1 and No. 2 cans as pie fillings. These packs are ready to empty into pie shells. Regular canned cherries require further blending with starches and spices to give body to the pies. U.S. Grade standards are A, B and C.

Factors of Quality. Canned red tart pitted cherries are considered for flavor and odor in addition to the factors grade listed below:

FOOD FACTS

IX - CHERRIES, CANNED

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	20	16-17	14-15
Freedom from Pits	20	16-17	14-15
Defects	30	24-26	21-23
Character	30	24-26	21-23

Grade A canned red tart pitted cherries must score not less than 90 points; Grade B, 80 points and Grade C, not less than 70 points.

Flavor and Odor. Canned cherries must have a normal flavor and odor which means that the color and odor are characteristic of red sweet cherries and that the product is free from objectional flavors and odors of any kind.

Color of canned cherries should be typical of the varietal group and of intensity and brightness characteristic of the variety, i.e., red to reddish brown.

Freedom from Pits refers to the incidence of pits and pit fragments.

Defects refer to the degree of freedom from harmless extraneous material; from damaged, misshapen or blemished cherries, from portions of stems and, in sweet pitted varieties, the presence of pits or pit fragments.

Character refers to the physical characteristics of the flesh of the cherries. Grade A cherries must be thick-fleshed and have a firm, tender texture.

Cherries, Sweet

Canned sweet cherries are available pitted and unpitted, either as the light sweet type, such as the Napoleon or Royal Ann varieties; and the dark sweet type, such as the Bing or Lambert varieties. They can be purchased in accord with U.S. Grades A B and C. The quality of sweet cherries is based on about the same criteria as described for red tart pitted cherries. They are mostly available in 30 pound cans.

Factors of Quality. Canned red sweet cherries are considered for flavor and odor in addition to the factors grade listed below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	30	24-26	21-23
Uniformity of Size	20	16-17	14-15
Defects	30	24-26	21-23
Character	20	16-17	14-15

Grade A canned red sweet cherries must score not less than 90 points; Grade B, 80 points and Grade C, not less than 70 points.

FOOD FACTS

IX - CHERRIES, CANNED

Flavor and Odor. Canned cherries must have a normal flavor and odor which means that the color and odor are characteristic of red sweet cherries and that the product is free from objectional flavors and odors of any kind.

Color of canned cherries should be typical of the varietal group and of intensity and brightness characteristic of the variety as follows:

Light - pinkish yellow to pale amber with blush appearing as surface color ranging from light pinkish to tan brownish.

Dark - deep red to purple red or purple black.

Uniformity of Size refers to the uniformity of diameters in pitted and unpitted cherries, and to the uniformity in weight and minimum weight in unpitted cherries.

Defects refer to the degree of freedom from harmless extraneous material; from damaged, misshapen or blemished cherries, from portions of stems and, in sweet pitted varieties, the presence of pits or pit fragments.

Character refers to the fleshiness, the tenderness and the texture in relation to the maturity and to the presence of serious processing cracks in unpitted style. To be Grade A, RSP cherries must be thick-fleshed and tender but not soft or noticeably flabby.

FOOD FACTS

IX - CRANBERRY SAUCE, CANNED

Cranberry sauce is made from cranberries which are grown in swampy, acid soil lowlands called bogs, in cool regions of the U.S. and Canada. The berry may be round or oblong, depending on the variety. They grow on small slender stems. The plant is called cranberry (or craneberry) because the slender stems of fruit curve like the neck of a crane.

Growers remove wild growth from the bog, spread it with sand, then plant the vines or cuttings 5 to 10 inches long. The vines are planted in the soil below the sand about 18 inches apart. A fully grown bog will cover the area like a carpet 20 to 30 inches deep. Bogs are flooded in early winter to protect the vines from frosts but are drained during the day when the sun comes out. They may be flooded at other times to prevent damage from insects and dry weather.

Massachusetts, Wisconsin, New Jersey and Washington are the leading cranberry producing states.

Canned cranberry sauce is produced from frozen cranberries which are thawed and cooked twice. Before each cooking, the product is run through a cleaner to remove rocks and other debris and the second time a magnet tray or detector is added for the removal of any tramp metal. After the second cooking, the jellied product is packed into cans or jars. Whole or semi-jellied cranberry sauce is made by adding thawed, cleaned, whole berries to the puree after the first cook. Cranberries have a great deal of natural pectin, so additional pectin does not need to be added.

The vast majority of cranberry sauce is packed in 24/16 oz. cans although some product is available in 6/#10 cans and 24/8 oz. cans. U.S. Grade standards are A and C and the Grade reference is CFR 7 Part 52.951.

Factors of Quality, scoring points and the limiting rule are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Limiting Rule</u>
Color	20	14-16
Consistency & Texture	40	28-33
Absence of Defects	20	14-16
Flavor & Odor	20	14-16

Grade A cranberry sauce must score not less than 85 points and Grade C, not less than 75 points.

Color refers to the presence of bright, dark red color typical of canned cranberries which are free from any dullness..

Consistency and Texture has the following meanings with respect to the following styles of cranberry sauce:

Jellied Style. The gel is tender to slightly firm and there may be evidence of reasonable separation of free liquid.

Whole Style. The skin particles and the semi-jelled portions are reasonably tender, and the fruit, seed and skin particles are dispersed reasonably uniform throughout the product.

Absence of Defects refers to the degree of freedom from foreign material, and objectionable material and from harmless extraneous particles in jellied-style; and from defective cranberries and foreign berries and particles thereof, fine stems, foreign and objectionable material in whole-style cranberry sauce. To be Grade A, jellied-style must be free or practically free of the above material that exceed the area of a circle $\frac{3}{16}$ inch in diameter. To be Grade B, whole-style cranberry sauce may not contain more than 3 defective cranberries or foreign berries and not more than 4 fine stems $\frac{3}{4}$ inch or more in length in 12 oz. net weight.

Flavor and Odor refers to the characteristic slightly tart flavor typical of cooked cranberries and the freedom from any trace of caramelized flavor, abnormal flavor or odor.

Figs are native to the Mediterranean region and came to California via Spain and Mexico. The fig is sometimes called the fruit without a flower, however, the inside of each fruit has several hundred tiny flowers.

Canned figs are produced solely from sound well-ripened fruit of the Kodata variety. It is packed whole and whole and broken (or split) in heavy syrup in 6/#10 cans. Diet figs are available packed in water. Counts (number per can) are 50/70 and 70/90.

Grades of canned figs are A, B and C and the reference is CFR 7 Part 52.2821.

FOOD FACTS

IX - FRUIT MIX, CANNED

There are three different types of fruit mixes used by the food service trade: (1) fruit cocktail, (2) fruits for salad (salad fruits or fruit salad), and (3) fruit mix. The FDA has established a Standard of Identify for Fruit Cocktail but not for fruit salad or fruit mix.

Fruit Cocktail

Fruit Cocktail had its origin in California by fruit processors who needed an outlet for fruits that did not meet the size standards for halves or slices. The market for this product which started as off-grade fruits has grown until it is probable the most popular fruit mix sold in the United States.

Fruit cocktail is prepared from a mixture of fresh, frozen or previously canned fruits as follows:

<u>Fruit</u>	<u>Style</u>	<u>Not less than</u> *	<u>Not more than</u> *
Peaches	Diced	30% by wt.	50% by wt.
Pears	Diced	25% by wt.	45% by wt.
Grapes	Whole	6% by wt.	20% by wt.
Pineapple	Diced	6% by wt.	16% by wt.
Cherries	Halves	2% by wt.	6% by wt.

* Percent of the drained fruit.

Liquid media designations are extra heavy syrup, heavy syrup, light syrup, slightly sweetened water, water, fruit juice, or water and juices. Although currently the most common packing medium is heavy syrup, the trend is to light syrup. According to the U.S. Standard of Identity, the product may also contain one or more of the following:

- 1 - Natural and artificial flavors.
- 2 - Spice.
- 3 - Vinegar, lemon juice or organic acids.
- 4 - Ascorbic acid to preserve color.

Fruit cocktail is used for salads, breakfast and dessert fruits, plain and gelatin snacks and in cakes and puddings and is the most popular fruit mix sold in the United States.

U.S. Grade Standards are Grades A and B and the Grade reference is CFR 7 Part 52.1051. Grade B peaches and pears are generally the highest quality packed in the industry. The product is packed 6/#10 cans per case.

Factors of Quality. The factors of quality, scoring points, and limiting rule for Grade B canned fruit cocktail is shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Clearness of Liquid Media	20	14-16
Color	20	14-16
Uniformity of Size	20	14-16
Absence of Defects	20	14-16
Character	20	14-16

Canned Grade B (Choice) is the highest level of fruit cocktail packed and marketed in the industry. Grade B fruit cocktail must score not less than 70 points.

Clearness of Liquid Media refers to the relative clarity of the packing medium of the fruit cocktail. Dullness or lack of clarity of the liquid is caused by over processing or the loss of artificial color from the cherries. The liquid drained away from the fruit cocktail may be slightly pink or slightly dull in color but not off color for any reason for Grade B products. The liquid may contain fruit particles which materially affect, but do not seriously affect, the appearance of the product.

Color refers to the general brightness and uniformity of the color typical of each of the fruit ingredients; the degree of freedom from staining from artificially colored cherries; and the dullness or off-color in any single fruit ingredient.

Uniformity of Size refers to the uniformity of size of intact halves of cherries and whole grapes or diced units of peaches, pears and pineapple or for sectors of pineapple.

Diced. The size of the edge of diced fruits is from $\frac{5}{16}$ of an inch (minimum) to $\frac{3}{4}$ of an inch (maximum).

Sectors of Pineapple. The length of the arc is between $\frac{3}{8}$ inch and $\frac{3}{4}$ inch. The thickness is between $\frac{5}{16}$ inch and $\frac{1}{2}$ inch. The radius is between $\frac{3}{4}$ inch to $1\frac{1}{4}$ inch.

For the product to meet Grade B, no more than 20 percent by weight may fall out of specifications for the dimensions for diced or sector fruit. The largest whole grape may not weigh more than four times the weight of the smallest; and the longest dimension on the cut surface of the largest intact cherry half does not exceed the longest dimension on the cut surface of the smallest intact cherry half by more than 50 percent.

Absence of Defects refers to the degree of freedom from: harmless extraneous material, peach or pear peel, pits or portions thereof, grape capstems, crushed or broken grapes, broken cherry halves, blemished units, and any other defects which detract from the appearance or edibility of the product.

Character refers to the texture and tenderness for the fruit ingredients as prepared and processed for canned fruit cocktail. For Grade B, each fruit ingredient may range from a firm to a soft texture without serious disintegration. Each fruit ingredient must Grade B as defined by its own grade standards.

Fruits for Salad

Fruits for salad (or salad fruits or fruit salad) does not have a U.S. Standard of Identity (as established by FDA) but does have Grade Standards set forth by the USDA, AMS. The grades allow for various styles such as unpeeled or peeled, quarters, halves or slices; thus buyers should state their preference, or read the ingredient statement for the style desired.

Fruits for salad consist of the following fruits in the styles and proportions shown:

<u>Fruit</u>	<u>Style</u>	<u>Percent</u>
Apricots:	Unpeeled or peeled, quartered or halves	15-30%
Peaches:	Peeled quarters or slices	23-46%
Pears:	Peeled quarters or slices	19-38%
Pineapple:	Wedge-shaped segments from slices	8-16%
Cherries:	Whole, artificially colored red and/or artificially flavored	3-8%
Grapes:	Whole natural, seedless	6-12%

Fruits for salad is used in salads, breakfast and dessert fruits, plain and gelatin salads and in cakes and puddings.

Fruits for salad are packed in heavy syrup in Number 10 cans, 6 to the case. The recommended drained weight is 64.5 oz. and the net weight is 108 oz. U.S. Grade Standards are Grade B (choice) and the grade reference is CFR 7 Part 52.3831.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned fruits for salad must also possess similar varietal characteristics and normal flavor and odor. Normal flavor and odor mean that the individual fruits may lack the distinctive flavor and odor of each fruit ingredient but that the product is free from objectionable flavors and odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	14-16
Uniformity of Count & Size	20	14-16
Absence of Defects	30	21-25
Character	30	21-24

Grade standards for fruits for salad are A and B but, as has been discussed previously, the product on the commercial market is Grade B (Choice).

Color refers to the uniformity and brightness of the color characteristic of at least reasonably well matured (ripened) fruit that has been properly prepared and processed. None of the fruit may be dull or off-color although the fruit may be slightly affected by pink staining.

Uniformity of Count and Size refers to the minimum number of units of fruit present as follows:

<u>Styles</u> (excluding Grapes)	<u>Minimum Count</u> (No. 10 Can)
Apricot halves, Quartered peaches and pears	No less than 20 units of 3 or more fruits
Apricot halves, Sliced or Quartered peaches and pears	No less than 20 units each of two or more fruits other than sliced styles
Quartered apricots, sliced or quartered peaches or pears	No less than 20 units of two or more fruits other than sliced peaches and pears and quartered apricots.

Absence of Defects refers to freedom from: loose or attached peel from peaches, pears or peeled apricots, blemishes typical for each fruit ingredient, and other defects not specifically mentioned that affect the appearance or edibility of the product.

The tolerance levels for defects are shown below:

<u>Defect</u>	<u>Grade B</u>
Peel (per lb. total contents)	Not more than 1/2 sq. inch
Blemishes (all fruit by count)	Not more than 20%
Seriously blemished	Not more than 10%

Character refers to the degree of ripeness, the texture and condition of the flesh, the firmness, the tenderness and the tendency of the units to retain their apparent original conformation and size without material disintegration. The character of each of the fruits is the same as that described for the individual fruits.

Fruit Mix

Fruit mix is not covered by the FDA Standard of Identity or by USDA Grade Standards. This product is an economical substitute for fruit cocktail since it does not have pineapple and maraschino cherries. The usual percentages of ingredients are as follows:

Fruit	Style	Percentage
Peaches	Diced or Chopped	35-60%
Pears	Diced or Chopped	30-50%
Grapes	Whole Seedless	8-20%

Fruit mix usually consists of Grade B diced peaches and pears and Grade C chopped products. This product is packed in number 10 cans, 6 to the case.

Grapes for canning are produced from the white Thompson Seedless variety. The entire production is grown in California.

The grapes are harvested, washed, graded and mechanically peeled. They are packed in heavy syrup in number 10 cans. There are approximately 450 to 625 grapes in a can. Diet grapes are available packed in water in smaller cans (24/#303).

Grapes that are artificially colored are known as grape jubilee, grapes maraschino, grapes joie or grape cerise in various parts of the country. Colored grapes are usually smaller than regular white grapes, with approximately 600 to 775 grapes to the can.

Canned grapes are used for many applications that are prohibitive for fresh grapes because of labor costs. Canned grapes may be used in gelatin salads, cabbage slaws, gravies, syrups, desserts and as garnishes.

Factors of Quality. In addition to the factors of grade listed below which are rated by score points, canned grapes must also possess similar varietal characteristics and a normal flavor. Normal flavor means that the grapes are free of objectional flavors of any kind.

Although there are U.S. Grade Standards for Grades A and B, Grade B is the highest level of grapes normally packed and marketed in the industry.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>
Color	20	14-16*
Uniformity of Size	20	14-16**
Absence of Defects	30	21-25
Character	30	21-24

* Grade A canned grapes may possess a reasonably uniform and reasonable bright typical color and may be reasonably uniform in size if the total score is not less than 85 points.

** Grade B canned grapes may fail to meet the reasonably uniform in size requirement if the total score is not less than 70 points. Grade A grapes must score a total of 85 points and Grade B, 70 points.

Color refers to the brightness and uniformity of the color of the entire lot. Grade B grapes must possess a reasonably uniform and reasonably bright color typical of Thompson seedless grapes that have been properly prepared and processed. The presence of grapes with noticeably dull color or brownish cast does not seriously affect the appearance or edibility of the product.

Uniformity of Size refers to the sizing and weight variation of intact grapes within a lot. Grade B grapes may vary in size as to the appearance and weight as long as such variation in size does not seriously affect the appearance of the product.

FOOD FACTS

IX - GRAPES, CANNED

Absence of Defects refers to the degree of freedom from main stems, harmless extraneous vegetable material, attached or loose capstems, mutilated grapes and other defects that affect the appearance or edibility of the product.

Tolerance

Grade B

Harmless Extraneous Material	3 per 100 oz.
Mutilated or Blemished	10% by weight
Serious Blemished	5% by weight
Capstems (per 2 oz. total contents)	1

Character refers to the fleshiness and texture of canned grapes and to the presence of serious processing cracks. Serious processing cracks means a crack without any discoloration that is split to or beyond the approximate center of the grape but is not a mutilated grape. Processing cracks that are not serious are not scored. Grade B grapes must be fairly uniform in texture and may be slightly soft but not flabby; and that no more than 10% by weight, of the drained grapes, may be affected by serious processing cracks.

FOOD FACTS

IX - ORANGE, MANDARIN, SEGMENTS, CANNED

The top quality Mandarin orange segments are imported from Japan, but good quality mandarin oranges may come from China, Taiwan or Spain. The product is available in whole or broken segments. Most of the mandarin oranges brought into this country are packed in light syrup. The product is packed 6/#10 cans per case. There are no U.S. standards for Grade.

FOOD FACTS

IX - PEACHES, CANNED

The yellow clingstone peach is used for canning because it has a very hard skin and close textured flesh. The pit of this peach clings very tightly to the flesh of the peach, hence the name. The Clingstone peach is very firm and is able to withstand the processing necessary for canning and still maintain its shape, color and texture.

The entire production of yellow Clingstone peaches for canning is grown in the San Joaquin valley of California. After grading, the peaches are conveyed to saws which cut or split the stone at the exact center. Automatic pitters remove the halved stones uniformly and smoothly. The halves are then peeled; thoroughly washed; inspected for defects such as color, blemishes, mechanical damage; and graded again for size. Halves are selected which are uniform in color, shape and ripeness.

Halves are filled into cans as full as possible without crushing and a syrup is added. Larger and irregular sizes that will spoil the uniformity of a pack are diverted to slicing. These halves are sliced by circular blades. They are hand fed into the machine with the cup side down.

Although the most popular styles of canned peaches are halves and slices, they are also available whole or in quarters, dices, and pieces (irregular pieces or mixed pieces of irregular sizes and shapes). Peaches are also available in solid pack for preparing pies and cobbles.

Peach halves are packed in various sizes which are expressed in terms of count per No. 10 can, as follows: Extra large - 25/30; Large - 30/35; Medium - 35/40 and Small - 40/50. Most peaches are packed in heavy syrup but the trend is to light syrup. Drained weights average 66.5 oz. for choice halves and slices with heavy syrup. The drained weight for halves and slices with light syrup average 68.5 oz. Solid pack has a drained weight average of 92 oz. The product are packed 6/#10 cans per case. The Grade reference is CFR 7 Part 52.2561.

Grades of canned yellow clingstone peaches are A, B and C. The highest quality level packed and marketed in the industry is Grade B (Choice), except for solid pie packs which qualify only for Grade C.

Factors of Quality. The grade of a lot (sample) of canned clingstone peaches is based on compliance with requirements of the following quality factors:

(a) Prerequisite Quality Factors:

1. Similar varietal characteristics
2. Flavor and Color
3. Brightness - Grade B not affected by dullness
4. Uniformity of size of slices
5. Pit material
6. Crushed or broken units
7. Peel
8. Character

(b) Classified Quality Factors:

1. Individual unit color
2. Workmanship
3. Blemished
4. Uniformity of size
5. Mechanical damage
6. Extraneous vegetable material

DEFINITION OF CLASSIFIED DEFECTS

QUALITY FACTOR	DEFECT	CLASSIFICATION			
		MIN	MAJ	SEV	CRIT
	<u>HALVES AND QUARTERS</u>				
Individual Unit Color	Fairly good, in Grades A and B		X		
	Poor, in Grades A, B and C			X	
Blemished	Not more than slightly	X			
	Materially		X		
	Seriously			X	
Uniformity of Size	Excess variation, each unit	X			
Mechanical Damage	Off-suture:				
	Not more than slightly	X			
	Materially		X		
	Seriously			X	
	Partially detached piece	X			
	Detached piece		X		
	Shelly unit (in Grades A and B)		X		
	Gouge:				
	Not more than slightly	X			
	Materially		X		
	Seriously			X	
Other mechanical damage:	Not more than slightly	X			
	Materially		X		
	Seriously			X	
Extraneous Vegetable Material					
	Short Stem (each stem)	X			
	Small Piece (each piece)				X

FOOD FACTS

IX - PEACHES, CANNED

QUALITY FACTOR	DEFECT	CLASSIFICATION			
		MIN	MAJ	SEV	CRIT
SLICES					
Individual Unit Color	Fairly good, in Grades A and B		X		
	Poor, in Grades A,B, and C			X	
Workmanship	Sliver		X		
	Slab			X	
Blemished	Not more than slightly	X			
	Materially		X		
	Seriously			X	
Mechanical Damage	Shelly unit, in Grades A and B		X		
	Gouge:				
	Not more than slightly	X			
	Materially		X		
	Seriously			X	
	Partial slice		X		
Extraneous Vegetable Material					
	Short Stem (each stem)	X			
	Small Piece (each piece)				X
DICES					
Individual Unit Color	Fairly good in Grade A and B (only-ea 8 g		X		
	Poor in Grades A,B and C-ea 8 g			X	
Workmanship	More than 20mm (0.79 in) and less than 8 mm (0.31 on 1 cut edge-ea 8 g	X			
Blemished	Materially (each 8 g)		X		
	Seriously (each 8 g)			X	
Extraneous Vegetable Material					
	Short Stem (each stem)	X			
	Short Piece (each piece)				X

TOLERANCE FOR DEFECTS FOR CLINGSTONE PEACHES

Acceptance Quality Level expressed as defects per hundred units.

		TOT	MAJ	SEV	CRIT
SLICES	Grade B	20.0	15.0	5.0	1.5
	Grade C	40.0	25.0	8.0	1.2
HALVES AND QUARTERS	Grade B	20.0	12.5	5.0	1.0
	Grade C	33.0	20.0	12.5	2.5
DICES	Grade B	15.0	8.5	4.0	0.65
	Grade C	20.0	10.0	8.5	1.0

FOOD FACTS

IX - PEARS, CANNED

Pears for canning are produced mostly in California and the Northwest. Pears grown in Washington and Oregon differ slightly from the California pears in that they have a longer definite neck while the California pears are more apple shaped. Most of the California pears are further processed in fruit mixes while the Northwest pears are packed straight.

The best quality pears are harvested at a mature, pre-ripe stage and allowed to ripen in storage where starches can break down to sugars. During this process ethylene gas is produced, but at times the gas may be pumped into the ripening rooms to speed maturation. Pears that are tree-ripened have a characteristic woody, fibrous and bland taste.

Ripening rooms are maintained between 60° and 70°F and a relative humidity of 90 percent. Temperatures above 80°F will cause a rapid breakdown in the interior fruit before the skins begin to show signs of ripening. When ripe, the pears are peeled, halved, cored and the stem fiber carefully removed.

Pears are available in several styles: whole, halves, quarters, slices, dices and pieces. Halves are by far the most popular style. Counts of Grade B (Choice) halves packed in a No. 10 can are as follows: 20/25, 25/30, 30/35, 35/40, and 40/45. The counts of Grade C pears (Standard) are usually a little higher, i.e., 30/40, 40/50 and 50/60. Most pears are packed in heavy syrup but the trend is to light syrup. Drained weights vary from 64.1 oz. for Choice and Standard halves in heavy or light syrup to 65.5 for slices and 67 oz. for diced pears. The product is packed 10 cans, 6 per case. U.S. Grade standards are B and C and the Grade reference in CFR 7 Part 52.1611.

Factors of Quality. In addition to the factors of grades listed below that are rated by score points, canned pears must possess similar varietal characteristics and normal flavor and odor. Normal flavor and odor means that the canned pears are free of objectional flavors and objectional odors of any kind.

FOOD FACTS

IX - PEARS, CANNED

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule</u>	<u>Grade C Limiting Rule</u>
Color	20	16-17	14-15
Uniformity of Size & Shapey	20	16-17	14-15
Defects	30	24-26	21-23
Character	30	24-26	21-23

Grade A canned pears must score a minimum of 90 points; Grade B, 80 points and Grade C must not score less than 70 points. Canned Grade B is the highest level of pears packed and marketed in the industry.

Color refers to the color typical of the variety and its uniformity in each unit and among the units. Grade B product may show a slight tint of pink, light tan, or beige.

Uniformity of Size and Shape refers to the symmetrical conformation of the units within the sample and to the weight variation between units of the sample.

Absence of Defects refers to the degree of freedom from: harmless extraneous vegetable material, peels, external stems, interior stems, seeds, core material or portions thereof, blemished units; also from improperly, insufficiently, or unevenly trimmed units for the applicable style; and from any other defects or defective units which detract from the appearance or edibility of the product.

Character refers to the degree of ripeness, texture, and tenderness of the product. Grade B may possess a texture of moderate graininess. The units may be slightly firm or slightly ragged with slightly frayed edges or slightly soft but are not mushy.

FOOD FACTS

IX - PINEAPPLE, CANNED

Top quality pineapple comes from the Philippines (and previously from Hawaii) although Thailand and Malaysia consistently produce good quality pineapple. South America and Mexico produce a lower quality. For those reasons, bids may specify "from Hawaii or the Philippines only." The balance of flavor and superior color are the principle reasons that pineapple from Hawaii and the Philippines consistently scores higher than minimum U.S. Grade Standards. It is for this reason that some packers have assigned special brand names for products from prime production areas.

Pineapple is prepared from fruit from which the peel and core have been removed. Styles available include slices, halves, broken slices, chunks, tidbits (about half the size of chunks), cubes, spears and chunks. Most pineapple is packed in heavy syrup but the trend is to choose light syrup, juice or water. The product is packed 6/#10 cans per case. U.S. Grade standards are A, B and C and the Grade reference is CFR 7 Part 52.1711.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned pineapple must be considered for factors of flavor and odor and tartness. Normal flavor and odor means that the canned pineapple possesses a distinct and normal flavor for the variety; is characteristic of properly ripened and properly matured pineapple that has been properly prepared and processed; and is free from objectionable flavors and odors of any kind. "Excessively tart" means that more than 1.35 grams of acid is present in 100 ml. of pineapple.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule*</u>	<u>Grade C Limiting Rule*</u>
Clearness of Liquor	10	8	7
Color	15	12-15	10-11
Absence of Defects	35	28-30	25-27
Character	40	32-35	28-31

Color of the pineapple should be bright and characteristic of properly ripened and properly matured pineapple of similar varietal characteristics. There may be slight variations in shades of characteristic color in the units, and there may be white radiating streaks present provided that such variations or streaks do not materially affect the appearance of the product.

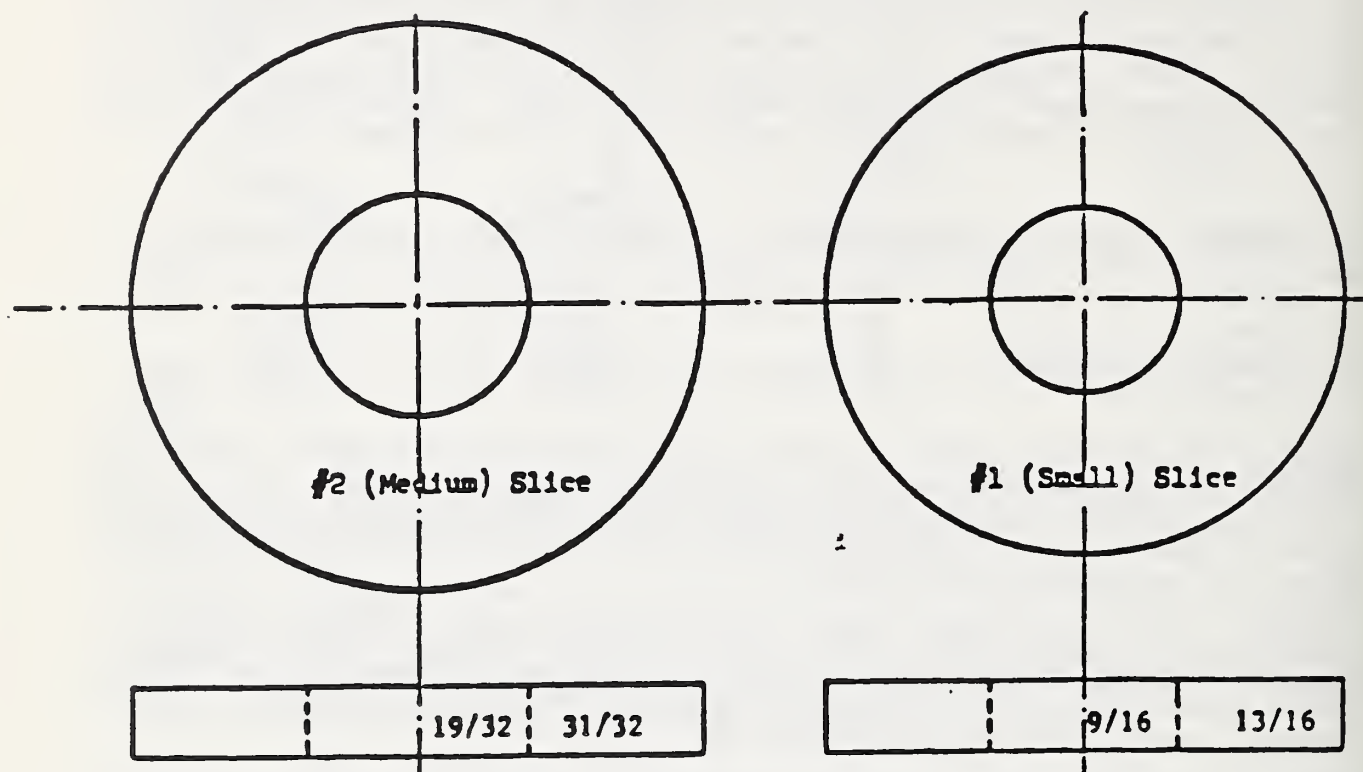
Uniformity of Size and Shape refers to the relative symmetry of the pineapple in the various styles of pack. Grade A shall be practically uniform in size. This is not a scored factor in crushed style pineapple. To get total score for crushed pineapple, multiply by 100 and divide by 80.

Absence of Defects refers to the relative degree of freedom from poorly trimmed units, blemished units, mashed units, and any other defects including specks in crushed style that detract from the appearance or edibility of the products.

Character refers to the degree of ripeness and maturity, the texture of the fruit, and the degree of freedom from core material. Grade A units should be practically uniform in ripeness, reasonably free from porosity, and reasonably firm so that the fruitlets appear as compact structures.

PINEAPPLE SLICES

FROM VARIOUS SIZE FRUIT
(ACTUAL SIZE)

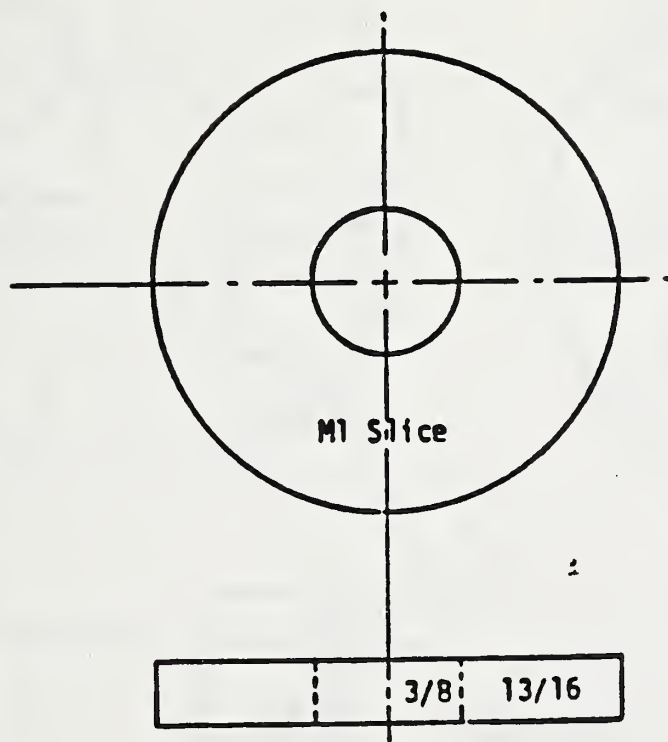


SPECIFICATIONS	No. 2 Fruit (Medium)		No. 1 Fruit (Small)	
	FANCY	CHOICE	JUICE	CHOICE
Can Size	#10	#10	#10	#10
Label Weight	6# 12 oz.	6# 12 oz.	6# 12 oz.	6# 12 oz.
No. of Slices	52	52	66	66
Syrup, Brix	18-22°B	18-22°B	15-16°B	18-22°B
Min. Average Drained	63.5 oz.	63.5 oz.	63.5	63.5
Weight of Slices				
Ave. Drained Weight of Syrup	44.5 oz.	44.5 oz.		44.5 oz.
Volume of Drained Syrup	39.4 fl. oz.	39.4 fl. oz.		39.4 fl. oz.
8 fl. oz. (1 cup) syrup at 20°B equivalent to:				
Sugar	1.8 oz.	1.8 oz.		1.8 oz.
Water	7.2 fl. oz.	7.2 fl. oz.		7.2 fl. oz.

Courtesy Castle and Cook

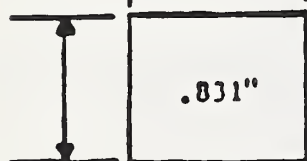
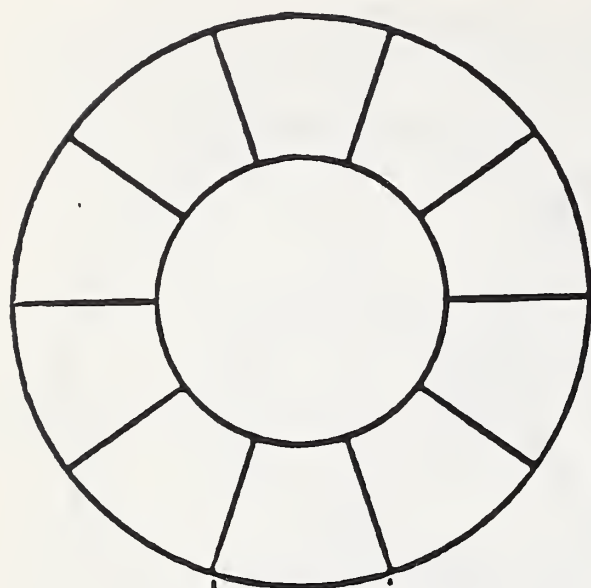
PINEAPPLE SLICES

(ACTUAL SIZE)



	From Sub-1T Fruit
Can Size	#10
Label Weight	6 lbs. 12 oz.
No. of Slices	100-110
Syrup Brix	18-22
Min. Ave. Drained Wt. of Slices	63.5 oz.
Drained Weight of Syrup	44.5 oz.
Volume of Drained Syrup	39.4 fl. oz.
8 fl. oz. (1 cup) Syrup	
equivalent to: Sugar	1.8 oz.
Water	7.2 fl. oz.

Courtesy Castle and Cook



← THICKNESS



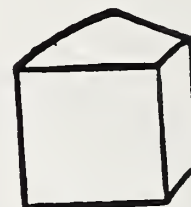
TOP



SIDE



FRONT



No. 2 CHUNKS

SPECIFICATIONS (AVERAGE WEIGHTS)		
	HEAVY SYRUP	IN JUICE
Can Size	#10	#10
Label Weight	6# 12 oz.	6# 10 oz.
No. of Chunks Avg.	270	270
Brix	18-22	15-16
Min. Avg. Drained Weight of Chunks	69 oz.	69 oz.
Drained Weight of Syrup	39 oz.	37 oz.
Volume of Drained Syrup	37 fl. oz	37 fl. oz.
8 fl. oz. (1 cup) Syrup equivalent to : Sugar	2.2 oz.	2.2. oz.
Water	7.0 fl. oz.	7.0 fl. oz.
Servings as a Dessert	25	25
Size of Serving	½ cup	½ cup

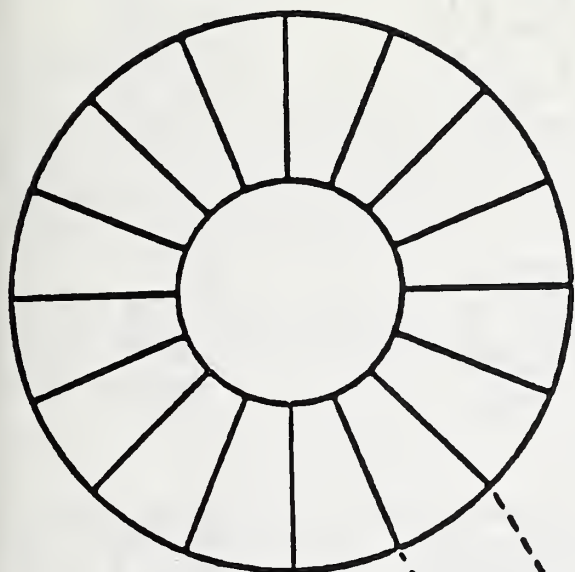
Courtesy Castle and Cook

TIDBITS

FOOD FACTS

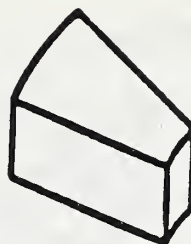
(ACTUAL SIZE)

IX - PINEAPPLE, CANNED



THICKNESS

.416"



No. 2 TIDBIT



TOP



FRONT

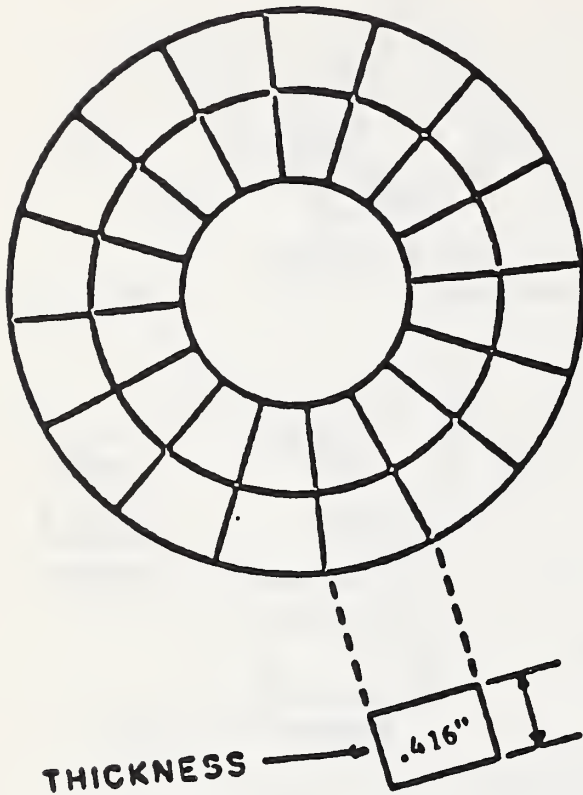


SIDE

SPECIFICATIONS (AVERAGE WEIGHTS)	
	Light Syrup
Can Size	#10
Label Weight	6# 10 oz.
Ave. No. of Tidbits	Appx. 1,000
Syrup, Brix	14-18°B
Min. Drained Weight of Tidbits	71.25 oz.
Drained Weight of Syrup	34.75 oz.
Volume of Drained Syrup	31 fl. oz.
8 fl. oz. (1 cup) Syrup	
equivalent to: Sugar	1.3 oz.
Water	7.4 fl. oz.
Servings as a Dessert	25
Size of Serving	½ cup

Courtesy Castle and Cook

(ACTUAL SIZE)



TOP



TOP



SIDE



SIDE



FRONT



FRONT

SPECIFICATIONS (AVERAGE WEIGHTS)		
	32-degree	Light Syrup
Can Size	#10	#10
Label Weight	7 lbs.	6 lbs. 10 oz.
Ave. No. of Cubes	2000	2000
Syrup, Brix	31-35	14-18
Min. Ave. Drained Weight of Cubes	71.25 oz.	71.25
Drained Weight of Syrup	43 oz.	32 oz.
Volume of Drained Syrup	36 fl. oz.	31 fl. oz.
8 fl. oz. (1 cup) Syrup equivalent to : Sugar	2.6 oz.	1.4 oz.
Water	6.7 fl. oz.	7.5 fl. oz.
Servings as a Dessert	25	25
Size of Serving	½ cup	½ cup

Courtesy Castle and Cook

FOOD FACTS

IX - PLUMS, PURPLE, CANNED

Purple plums are grown in the Northwest (approximately 60%) and in Michigan (40%). Purple plums may be referred to in the fresh state by several terms including purple prune plums, prune plums, blue plums or Italian prunes. There are two types of plums - clingstone and freestone. The clingstone is processed for canning and the freestone is eaten fresh.

Purple plums are harvested in a mature condition when the flavor and texture are at their best. They are processed either as whole or halves. Whole plums retain their pits.

Plums are packed in heavy syrup or water (diet pack) in 6/#10 cans.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned purple plums must be considered by factors of similar varietal characteristics and normal flavor and odor which are not rated. Normal flavor and odor means that the product is free from objectional flavors and objectional odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule*</u>	<u>Grade C Limiting Rule*</u>
Color	20	16-17	14-15
Uniformity of Size	20	16-17	14-15
Defects	30	24-26	21-23
Character	30	24-26	21-23

Grade A canned purple plums must score not less than 90 points, Grade B, not less than 80 points, and Grade C, not less than 70 points. Canned Grade B is the highest level of purple plums packed and marketed in the industry.

Color refers to the color of the skin and any exposed flesh typical for the varietal group and to the intensity and brightness of such characteristic color. Characteristic mottling on the skin for the varietal group is considered as typical color and not lacking in uniformity of color.

Uniformity of Size. Compliance with uniformity of size is ascertained by determining the percent by which the weight of the largest full-size unit exceeds the weight of the smallest full-size unit in the sample. For Grade B the largest whole unit shall not exceed the smallest unit by more than 75 percent by weight.

Defects refer to the degree of freedom from stems, leaves, crushed or broken units, pits or loose pits for the applicable style, damaged or seriously damaged units, and from any other defects not specifically mentioned which detract from the appearance or edibility of the product.

Character refers to the texture and condition of the flesh, to the tenderness and firmness of the plums, and to shriveled areas of the skin.

Prunes are the whole ripe fruit of the plum tree which have the greater portion of the moisture initially removed and are processed for canning by rehydrating in boiling water or steam. Dried prunes store best when the moist content is around 18 percent. This is called a natural condition prune. After rehydration, they may be held in cold storage until needed. They are then sterilized and inspected for color, uniformity of size, character of fruit (fiberness and toughness of skin and texture) and absence of defects.

Prunes are sized and sold through a unit of measure known as the cut out count. The cut out count is determined by draining the liquid from the prunes and determining the number of prunes per pound. This relates to the total count per can based on the drained weight and the size of the prunes.

There are two types of canned dried prunes - sweet type and tart type. The sweet type include such varieties as French, Imperials, Sugar and Robe de Sargeant varieties. The tart type includes the Italian variety.

There are two styles of prunes, both prepared from dried prunes - Prepared style and Nectarized style.

Prepared prunes are rehydrated to approximately 67% moisture, packed in a number 10 can and topped with (extra) heavy syrup. They are fully cooked and ready to serve. Counts (number of prunes per can) range from 70-90, 115-135, 140-180, 190-210, 210-230 and 230-260.

Nectarized prunes are a style in which one-third more rehydrated prunes are packed in the can than regular style. These prunes are water packed, but will equalize out as 24-30° brix as a natural syrup. Nectarized prunes are used in many hospitals and health care units. Counts in a number 10 can range from 155-175, 215-235 and 260-380.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned dried prunes must be considered for factors of varietal characteristics and normal flavor.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Limiting Rule*</u>	<u>Grade C Limiting Rule*</u>
Color	20	15-17	12-14
Uniformity of Size	15	12-13	10-11
Defects	30	24-26	17-21
Character	35	26-30	21-25

Grade A prunes must score 90 points, grade B, 75 points and Grade C not less than 60 points.

Color refers to the typical color of the skins of the prunes which may be black, blue-black, or reddish brown. For Grade A, there should be no more than 5% by count that possesses a dull chocolate-brown surface color or any abnormal darkening of the flesh due to carmelization or fermentation.

Uniformity of Size For Grade A, the weight of the largest prune may not exceed the weight of the smallest prune by more than 75%. For Grade B, the weight of the largest prune may not be more than twice the weight of the smallest.

Uniformity of Size For Grade A, the weight of the largest prune may not exceed the weight of the smallest prune by more than 75%. For Grade B, the weight of the largest prune may not be more than twice the weight of the smallest.

Absence of Defects refers to the degree of freedom from the following:

1. Prunes that possess growth cracks, splits, breaks in the skin, or skin damage.
2. Prunes that possess leathery areas on the skin as a result of mildew, leaf chafing, or limb rubs.
3. Prunes that are so affected by burning or scorching in the sun, or in dehydration, as to damage materially the skin or flesh.
4. Prunes that are damaged by insect injury or similar defects which materially affect the appearance, edibility or keeping quality of the fruit.

Character of Fruit refers to the fiberness and toughness of the skin as well as the overall softness or hardness in texture of the prunes.

The best advice for storing canned fruits is to "store in a cool dry place". If humidity is too high, condensate might cause cans to rust at the seams. High heat might cause more rapid deterioration of product quality. Storage at temperatures below freezing will cause changes in the texture and consistency of the same product.

See subsequent section on "Storage and Care of Food Products."

GRADES

Commercial grades of processed fruits, juices and vegetables (canned and frozen) encompass mainly packer-distributor grades as illustrated on the chart listed in the Frozen Fruit section. These grades follow rather explicitly the standards for grades as issued by the U.S. Department of Agriculture.¹

Each factor of grade is evaluated on the basis of score points necessary to qualify to reach grade, for example, 90 points for Grade A, 80 points for Grade B, etc. In some cases, there are rule factors in which the product must score so many points for individual factors of grade to be included in a certain grade.

In some instances packers may require a slightly higher point score than does the USDA regulations. For example, the USDA total point score for canned cut corn is 90, but a packer may require cut corn packed under his label to score 93 points to be labeled Grade A. Although scores for various factors of quality may vary between packers by a point or so, this does not necessarily indicate that some packers' grades, as listed on the packer grade charts, are superior to others. However, as could be expected, a packer may strive to upgrade the quality level of his product to give him a slight edge over the competition.

In addition to the A, B and C levels of grades shown on the packer grade chart, some packers offer a "Super label" which represents products with high grade scores which are derived from particular varieties or come from selected growing areas. These labels are generally recognized as superior and demand a higher price. They are purchased by proprietors of deluxe dining rooms who are looking for a menu edge (at any price).

The terms Grade A, Grade B and Grade C are used herein rather than the descriptive terms, Fancy, Choice, etc. For clarification the dual nomenclature is as follows:

<u>Grade</u>	<u>Fruits</u>	<u>Vegetables</u>
Grade A	Fancy	Fancy
Grade B	Choice	Extra Standard
Grade C	Standard	Standard

The USDA standards of grade also allow for a Grade D, or substandard grade, in most processed products. These grades, however, are not generally available commercially. If however, you are offered a Grade D product at an attractive price, it might be worthwhile to examine the opportunity carefully. For example, if green beans are downgraded into substandard because of excessive defects (stems, variable sizes, ragged cuts, etc.), the product might actually score a high Grade A in other points and represent a good buy particularly for serving from a steam table where one defective piece can be set aside. These products are normally sold under separate labels disassociated with the A, B and C labels.

1. See FNS Technical Assistance Manual "Directory of Information Sources".

Beans, Green and Wax.

In the western states, notably California, it generally takes from 25 to 39 days for a crop of bush snap beans to reach the harvesting stage after the field has reached full bloom. The principals affecting quality grade are fiber and seed content. Maturity changes rapidly and 1 or 2 days on either side of the optimum can be critical.

The green bean harvesting machine is a tractor mounted multirow machine that picks wide swaths both across and down the rows. It is designed for large scale green bean operations. A picking reel with unique flicking action flicks the beans off the stalk, resulting in reduced product damage and fewer bean clusters. The machine strips the beans from the plant, blows out loose trash and conveys the beans to a hopper which is taken immediately to the canning or freezing plant.

The most common variety of green beans for many years was blue lake, but today it is almost a generic term. Geneticists have produced hybrids with this variety which allow for much wider growing areas. Originally, the blue lake was developed and grown in the Pacific Northwest, but good quality varieties are available in the Midwest and even in New York and the South. The original blue lake was a dark green, stringless bean with a rich flavor. The beans from New York and the South are generally lighter in color than those grown in the Northwest and Midwest.

Wax beans are a yellow colored variety of stringless bean favored by many because of their distinctive and somewhat milder flavor. Types of packs for both styles include whole, whole vertical pack, whole asparagus style, French style, cut, short cut or mixed. Approximately 63 percent of the crop goes to regular cut beans, 27 percent French cut, and 3 percent each to Italian, wax, and whole styles.

The diameter (thickness) of beans are measured in terms of "sieve" sizes, which normally range from a 3 (small, about 1/4 inch or the size of a lead pencil) to a 5 (large, 3/8 inch). Cut beans range in length from 3/4" to 2-3/4". The most popular food service item is a cut green bean which measures about 1-1/2 inches in length. If a Grade A bean is selected, a size 4 sieve might be chosen; if a Grade B is selected, a size 5 sieve might be preferred. The USDA recommended drained weight of a No. 10 can of cut beans is 60 ounces. The product is packed 6/#10 cans per case. U.S. Grade standards are A, B and C and the grade reference is CFR 7 Part 52.441.

In packs of "short cut" green beans, not less than 75% of the pods must be 3/4" in length and not more than 1% can exceed 1-1/4".

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned green and wax beans must be of similar varietal characteristics and have a normal flavor and odor which are not rated. Normal flavor and odor means that the canned green and wax beans are free of objectionable flavors and objectionable odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Clearness of Liquor	10	8	7
Color	15	12-15	10-11
Absence of Defects	35	28-30	25-27
Character	40	32-35	28-31

Clearness of Liquor for Grade A beans means that the liquor may possess a slight tint of yellow green to green color, and not more than a trace of suspended material or sediment should be present.

Color for Grade A beans means that the beans should possess a color that is bright and typical of very young and tender green beans or wax beans. The beans should be of similar varietal characteristics with not more than 5% by count of the units which vary markedly from this typical color.

Absence of Defects refers to the degree of freedom from blemished and seriously blemished units; from unstemmed units, detached stems, leaves, extraneous vegetable matter; or split units, loose seeds and pieces of seed, small pieces of pod, and ragged cut units or units damaged by mechanical injury; and any other defects not specifically defined that effect the appearance or edibility of the units or the product.

Character refers to the maturity as reflected in the degree of development of pods and seeds and to the tenderness of the pods; to the degree of sloughing of the epidermis; and to the appearance of the slices in french style beans.

Beans, Lima

Lima beans are produced throughout the country, 24 percent in the East, 40 percent in the Midwest and 36 percent in California. Thin seeded varieties of thorgreen and similar types of bush lima beans are called baby limas. These are small green beans with soft skin and tender full-flavored. Approximately 60 percent of the crop are of this type, 32 percent are the larger Fordhook varieties and 8 percent the "butterbean".

As in the case with all other top quality canned vegetables, the beans are harvested at the exact time when the bean is young, plump and tender. An exception is that limas may be produced from rehydrated dry beans but the label must so state. (See Canned Dry Beans.)

Lima beans are harvested and hulled mechanically. The entire bush is pulled when the beans have developed the right size. The bush is put through a cleaning reel to remove any dirt which may have adhered to the roots. A thresher removes the beans from the pods (it is the same type thresher which is used for the pea packs). Threshed vines are stacked and used for ensilage or other stock feeding or for fertilizer or soil humus. The hulled beans are washed to remove all dirt and foreign matter. Then the inspected picked beans are graded for size, float tested for tenderness and canned within a few hours after the bush has been pulled from the field.

Lima beans are graded for size according to the width, the most common sizes being:

- Tiny - 14/32 to 15/32 inch
- Small - 15/32 to 17/32 inch
- Medium - 17/32 to 19/32 inch.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned lima beans must be of similar varietal characteristics and have normal flavor and odor which are not rated. Normal flavor and odor means that the canned lima beans are free of objectionable flavors and objectionable odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Color	35	39-31	26-28
Clearness of Liquor	10	7-8	5-6
Absence of Defects	25	20-21	18-19
Character	30	24-26	21-23

Color refers to the predominating and characteristic color of the exterior surface of the canned lima beans. For Grade A, not more than 10% by count may be light in color, provided that not more than 1% by count, of all lima beans are white.

Clearness of Liquor means that liquor may be slightly clouded, and not more than a slight amount of sediment should be present to meet U.S. Grade A.

Absence of Defects refers to the degree of freedom from extraneous vegetable matter, loose skins, loose cotyledons, broken beans, sprouted beans, and beans that show light discoloration or that are blemished or seriously blemished.

Character refers to the tenderness and maturity of the product.

Beans, Canned, Dry

Canned dry beans are prepared from dried beans (or peas) which have been dried in the field for approximately 10 days after cutting to reduce the moisture content. (Time of cutting is important to obtain the highest quality at the right stage of maturity.) The plants are thrashed in the field to remove the beans and to clean much of the debris. The beans are brought into the warehouse, cleaned again, size-graded and inspected. The highest quality beans (and peas), No. 1 grade, are bagged in 100 pound sacks and shipped to packers for further processing (canning or packaging for sale as dry beans or for soups). Temperature and humidity must be controlled in the storage area (high temperature hardens and high humidity causes mold).

Dried beans for canning may be made from the following types of beans:

blackeye pea	great northern	pinto
baby lima	dark red kidney	pink bean
chick pea	light red kidney	red bean
fordhook lima	navy	white bean
garbanzo bean	pea bean	yellow eyed bean

The beans must be soaked in water 8 to 12 hours prior to processing. There are three USDA classifications which utilize dry beans, (1) dried beans, (2) pork and beans and (3) baked beans. EDTA (ethylene diamine tetraacetic acid) is usually added for color retention, otherwise the beans would turn black.

Dried beans may be packed in the following styles:

- (a) in tomato sauce. The sauce may be highly seasoned.
- (b) in sweetened sauce. The sauce may also be highly seasoned.
- (c) in brine.

Beans may be used in a number of ways depending upon the type of bean and the sauce. They may be used in preparing soups, chili, vegetable dishes or salads.

Factors of Quality In addition to the of factors listed below that are rated by score points, canned dry beans must also be considered for consistency and flavor which are not rated.

Consistency refers to the smoothness of the sauce (slightly grainy or slightly lumpy). The product may have a thick consistency with no separation of liquid or a thin consistency with separation of liquid but not watery. The beans should not be so thick to the extent that the beans cannot be removed from the can without causing damage to the beans.

Flavor refers to flavor and odor that is characteristic of the pack and the freedom from objectionable flavors and odors.

Grades of canned dried beans are A and B. Grade A must score not less than 90 points and Grade B not less than 80 points. The grade reference is CFR 7 Part 52.411.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>
Color	20	16*-17
Character	40	32-35*
Absence of Defects	40	32-35*

Dried beans that that score these points cannot be graded higher than Grade B, regardless of total score.

Color. Canned dried beans should be a color which is bright and reasonably uniform throughout. The sauce or brine should have a color typical of the style of pack.

Defects refers to the degree of freedom from harmless extraneous vegetable matter, loose or split skins, broken or mashed beans, blemished beans, or any other defects which may affect the appearance or edibility of the product.

Character refers to the degree of freedom from hard beans, mushy beans, beans with tough skins, and the overall texture of the product.

Pork and Beans

Pork and beans is the product prepared from dry mature white beans with pork or pork fat and with a sauce prepared from water and tomato products. The amount of pork is not controlled by the US standard except that the listing of ingredients must show beans as the predominant ingredient. Navy (or pea) beans are usually the bean of choice for this product although great northern beans are frequently used. Several other types of white beans may be used but they do not constitute a significant commercial factor. The product is packed 6/#10 cans per case. U.S. Grade standards are A and B and the Grade reference is CFR 7 Part 52.6441.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned pork and beans must be considered for factors of similar varietal characteristics, color and flavor.

Varietal characteristics refers to the similarity in size and shape of the beans.

Color refers to the bright, typical and reasonably uniform color of the beans and the distinguishing color characteristic of the addition of tomato products to the sauce.

Flavor refers to the characteristic flavor and odor of the product, free from objectionable odors and flavors of any kind and the rich, distinct characteristic flavor of the sauce.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>
Consistency	20	16-17
Absence of Defects	40	32-35*
Character	40	32-35*

*Canned pork and beans that score within range cannot be graded higher than Grade B, regardless of total score.

Consistency is determined two minutes after the product, without prior stirring or shaking, is emptied on a flat dry surface. Evaluation is then made on the smoothness of the sauce and its lack of grainy texture or lumpiness, and to the degree the sauce clings to the beans and/or separates from the mound. The beans should not mat or compact to the extent that the beans cannot be removed from the container without causing damage or excessive mushiness.

Defects refers to the degree of freedom from harmless extraneous vegetable matter, loose or split skins, broken or mashed beans, blemished beans, or any other defects which may affect the appearance or edibility of the product.

Character refers to the degree of freedom from hard beans, mushy beans, beans with tough skins, and the overall texture of the product.

Baked Beans

Baked beans must be baked in an oven in dry heat to be labeled Baked Beans. Most of the product on the market today is called "Baked Style Beans" in order to get around the expense involved for the baking operation. Baked beans may be prepared with tomato sauce or New England or Boston Style with sugar and/or molasses. New England is the most popular style.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned baked beans must be considered for factors of varietal characteristics which are not rated. Varietal characteristics refers to the similarity in size and shape of the beans.

Grades for canned baked beans are A and B. Grade A must score not less than 90 points and Grade B must score not less than 80 points.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>
Color	15	12-13*
Consistency	20	16*-17
Flavor	20	16*-17
Character	20	16*-17
Absence of Defects	25	20-21*

Baked beans that that score these points cannot be graded higher than Grade B, regardless of total score.

Color of the beans should be bright and reasonably uniform throughout. The sauce of brine should have a color typical of the style of pack.

Consistency is determined two minutes after the product, without prior stirring or shaking, is emptied on a flat dry surface. Evaluation is then made on the smoothness of the sauce and its lack of grainy texture or lumpiness, and to the degree the sauce clings to the beans and/or separates from the mound. The beans should not mat or compact to the extent that the beans cannot be removed from the container without causing damage or excessive mushiness.

FOOD FACTS

IX - BEANS, CANNED

Flavor should be characteristic for the variety of bean and the style of pack with all components in proper balance. The product should be free of any objectionable flavors and odors.

Defects refers to the degree of freedom from harmless extraneous vegetable matter, loose or split skins, broken or mashed beans, blemished beans, or any other defects which may affect the appearance or edibility of the product.

Character refers to the degree of freedom from hard beans, mushy beans, beans with tough skins, and the overall texture of the product.

FOOD FACTS

IX - BEETS, CANNED

Wisconsin and New York account for over 70 percent of the production of beets for canning, with Texas next, producing less than 10 percent. Beets are harvested between 1.75 and 2.5 inches in diameter. Because size and uniformity are factors of grade, beets are size-graded prior to processing. Tiny beets (300/over per No. 10 can) are packed for the gourmet market. Varieties are selected to produce a uniformity of size, a dark red color throughout the season and more nearly perfect spherical shape. The quality yardstick for canned beets is (1) flavor; fresh with no fiber or woody texture; (2) color; deep, rich and with no veins or white streaks; and (3) tenderness; if the flavor and color are right, the beets will be tender.

Whole and sliced beets are the most commonly ordered styles. The number of whole beets in a No. 10 can is as follows:

Size 1 - Tiny 250 or over

Size 2 - Tiny 175 - 249

Size 3 - Small 125 - 174

Size 4 - Small 75 - 124

Size 5 - Medium 50 - 74

Size 6 - Medium Less than 50.

Sizes (diameters) of sliced beets are as follows:

Small - Less than 2 inches

Medium - From 2 to 2-1/2 inches

Large - Over 2-1/2 inches

Sliced beets are approximately 3/16 inch thick, with end slices or slabs removed. They may be straight cut or crinkle cut (wavy or scalloped slice similar to french fries). Slices are size graded into small (less than 2 inches), medium (2 - 2-1/2 inches) and large (over 2 inches).

Other styles include diced (3/8 inch cubes), french style or shoestring, cut (large beets cut into wedge shaped segments) and salad style (the end cuts or slabs of sliced beets).

The recommended average drained weight for beets is as follows:

Whole Beets (Sizes 1-3)	69 ounces
Whole Beets (Sizes 4-6)	68 ounces
Small Slices	69 ounces
Medium Slices	68 ounces
Quarters	70 ounces
Dices	72 ounces

This product is packed 6/#10 cans per case. U.S. Grade standards are A and C and the Grade reference is CFR 7 Part 52.521.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned beets must possess similar varietal characteristics and have a normal flavor and odor. Normal flavor and odor means that the canned beets are free from objectionable flavors and objectionable odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Minimum</u>
Color	25	18-20*
Uniformity of Size & Shape	15	8-11
Absence of Defects	30	22-25*
Texture	30	22-25*

* Canned beets that score within this range cannot be graded higher than Grade C, regardless of total score.

Grade A must score not less than 85 points and Grade C not less than 70 points.

Color refers to a uniform bright color typical of beets produced from similar varietal characteristics.

Uniformity of Size and Shape refers to the relative uniformity of sizing and shape of the product depending on the style. Specific meanings for various styles are:

Whole for Grade A, the beets may vary moderately in shape and the diameter of the largest beet does not exceed the diameter of the smallest beet by more than 50 percent of the diameter of the smallest beet.

Sliced for Grade A the individual slice is not more than 5/16 inch in thickness. The diameter of the largest slice does not exceed the diameter of the smallest slice by more than 50 percent of the diameter of the smallest slice.

Diced The units should be fairly uniform in size and shape with edges measuring not more than 1/2 inch. The aggregate weight of all units which are smaller than one-half of a cube and all large and irregular units does not exceed 15 percent of the weight of all units.

French Style The strips should be fairly uniform in size and shape, with cross sections measuring not more than 3/16 inch. The aggregate weight of strips less than 1-1/2 inches in length does not exceed 25 percent of the weight of all the strips.

FOOD FACTS

IX - BEETS, CANNED

Cut The individual units weigh not less than 1/4 ounce nor more than 2 ounces each. The largest unit weighs not more than four times the weight of the smallest unit.

Absence of Defects refers to the degree of freedom from defective units such as slabs, units damaged by mechanical injury, units blemished by brown or black internal or external discoloration, insect injury, or units blemished by other means.

Texture refers to the tenderness of the beets and the degree of freedom from stringy or coarse fibers.

FOOD FACTS

IX - CARROTS, CANNED

California leads in the production of carrots with approximately 55 percent, Texas 14 percent followed by Wisconsin and Michigan with less than 10 percent each and Washington, Oregon and New York with less than 4 percent each.

Of the total carrot production, about 2/3 is marketed as fresh or nonprocessed product, 1/4 is frozen and the remainder canned, much going for further processed products such as soups.

If fresh carrots are stored under proper conditions, 32°F and 90-95 relative humidity, they can be held 4 to 5 months before processing, however, the presence of ethylene gas in the storage atmosphere results in a bitter taste, caused by the production of a compound called isocoumarin.

Canned carrots are available in several styles: whole, slices, quarters, dices, cut and shoestring (French style or Julienne). The drained weight for various styles of carrots, per No. 10 can, is as follows:

Whole Baby (100 count)	69 ounces
Slices	69 ounces
Quarters	70 ounces
Dices	72 ounces
Shoestring	68 ounces

The product is packed 6/#10 cans per case. U.S. Grade standards are A and C and the grade reference is CFR 7 Part 52.671.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned carrots must be considered for factors of similar varietal characteristics and normal flavor and odor which are not rated. Normal flavor and odor means that the canned carrots are free of objectionable flavors and objectionable odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Minimum</u>
Color	25	18-20*
Uniformity of Size & Shape	15	8-11*
Absence of Defects	30	22-25*
Texture	30	22-25*

* Canned carrots that score within this range cannot be graded higher than Grade C, regardless of total score.

Grade A must score not less than 85 points and Grade C not less than 70 points.

Color refers to the characteristic bright orange yellow color typical of canned carrots. The presence of green units does not more than slightly affect the appearance or eating quality of the product.

Uniformity has the following meanings with respect to styles for Grade A:

Whole The size of the individual carrot is not more than 1-3/4 inches in diameter, and the carrots may vary moderately in shape. The diameter of the largest unit is not more than 50 percent greater than the diameter of the second smallest unit.

Quartered The carrots from which the quarters have been prepared were a size not more than 2-1/2 inches in diameter. The diameter of the largest quarter is not more than 50 percent greater than the diameter of the second smallest quarter, and the length of the longest quarter is not more than 50 percent greater than the length of the second shortest quarter.

Sliced The individual slice is not more than 3/8 inch in thickness and not more than 2-1/2 inches in diameter. Of all the sliced carrots, in the 90 percent by count that are the most uniform in diameter, the diameter of the slice with the greatest diameter does not exceed the diameter of the slice of the smallest diameter by more than 50 percent, provided that the overall appearance of the product is not materially affected.

Diced The units should be practically uniform in size and shape with the edges, other than the rounded outer edges, measuring approximately 1/2 inch or less. The aggregate weight of all units of irregular shape which are noticeable smaller than one-half the volume of an average size cube and of all noticeable large and large irregular shaped units does not exceed 12 percent of the weight of all units.

French Style The strips should be practically uniform in size and shape with cross sections measuring approximately 3/16 inch. The aggregate weight of all strips for less than 1/2 inch in length does not exceed 12 percent of the weight of all the strips.

FOOD FACTS

IX - CARROTS, CANNED

Absence of defects refers to the degree of freedom from defective units such as those damaged by mechanical injury, unpeeled units, units blemished or seriously blemished by internal or external discoloration, units damaged by pathological or insect injury, or units blemished or seriously blemished by other means.

Texture refers to the tenderness of the carrots and the degree of freedom from coarse and fibrous units.

FOOD FACTS

IX - CELERY, CANNED

Suitable harvesting dates for a given day's planting of celery may extend over a period of 10 days. During the latter half of this time, the yield will increase tremendously, but if delayed too long, defects such as pithiness, yellow leaves and seed stalks occur. Harvesting before the optimum time seriously reduces the yield and/or profitability of the crop.

California and Florida produce the majority of the celery marketed in the U.S. Celery is normally marketed as a fresh product since it can be stored for 2 to 3 months under proper conditions. Because of its high moisture content, it does not freeze well. It can, however, be canned. At least one packer has developed special processing techniques which maintain the crispness and character of the product through processing.

Celery is available either as uncooked acidified (usually with citric acid added) or cooked. The acidified type is more crisp than the cooked product. The acidified type might be best used in tuna or other salads. The cooked product might be best used in soups or sauces in which a firm celery is not necessary. The styles available include sliced, diced or chopped. Celery is sliced either straight across (straight cut) or on the bias (45 degree angle). The product is packed 6/#10 cans per case.

U.S. Grade standards are A and B and the Grade reference is CFR 7 Part 52.6571. Grade A must score not less than 90 points and Grade B not less than 80 points.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned celery must be considered for factors of similar varietal characteristics and normal flavor and odor that are not rated. Normal flavor and odor means that the canned celery is free of objectionable flavors and objectionable odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>
Brightness	20	16-17
Character	30	24-26
Color	20	16-17
Defects	30	24-26

Brightness refers to the extent that the overall appearance of the sample unit as a mass is affected by dullness from improper processing or any other cause.

FOOD FACTS

IX - CELERY, CANNED

Character refers to the uniformity of texture and the relative freedom from coarseness, stringiness, or toughness.

Color refers to the typical, practically uniform green and white color characteristic of canned celery.

Defects refers to the freedom from extraneous vegetable material, mechanical damage, celery leaf material, blemished units, and basal portions.

FOOD FACTS

IX - CORN, CANNED

Almost 80 percent of the corn crop for processing is produced in the Midwest, 17 percent in the Northwest and the remainder in the East. Two thirds of this corn is canned, and one-third frozen. Florida produces the majority of the crop that is eaten fresh.

Sweet corn for processing is harvested when the kernels are in the milk stage. The product passes prime maturity very quickly, 4-5 days late and the kernels lose their sweet flavor and become tough and starchy. Corn is cooled immediately after picking with hydrocooling (cooling is also accomplished by flooding, spraying or immersion in cold water), the common practice among progressive growers to slow down the rate of conversion of sugar to starch.

Whole Kernel Corn

Whole kernel corn is prepared from clean, sound, succulent kernels of sweet corn classified as being in the milk stage. Corn is packed regular style or "vacuum packed". The product is considered vacuum packed when the liquid in the container is not more than 20 percent of the net weight and the container is closed under conditions creating a high vacuum. Regular corn is packed in brine. Corn color is designated as either white or yellow (golden).

The average drained weight of high quality whole kernel, regular pack, corn in a #10 can is 70 oz. The drained weight of vacuum packed corn is 72 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A, B and C and the Grade reference is CFR 7 Part 52.881.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned whole kernel corn must possess similar varietal characteristics which are not rated.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Color	10	8	6-7
Cut	10	8	6-7
Absence of Defects	20	16-17	14-15
Tenderness and Maturity	40	32-35	30-31
Flavor	20	16-17	14-15

Grade A canned whole kernel corn must score 90 points, Grade B, 80 points, and Grade C not less than 70 points.

Color. For Grade A, the color of the kernel should possess a practically uniform color typical of tender sweet corn and the product should be bright and practically free from off-variety kernels.

Cut refers to the degree of smoothness of the cut surface of the kernel, uniformity and depth of the cut, and to the degree of freedom from adhering cob tissue.

Absence of Defects refers to the degree of freedom from pieces of cob, husk, silk or other harmless extraneous vegetable matter, pulled kernels, ragged kernels, crushed kernels, loose skins, and from damaged or seriously damaged kernels. For Grade A, the presence of defects mentioned above should not more than slightly effect the appearance or eating quality of the product.

Tenderness and Maturity. For Grade A, the kernels should be in the milk or early cream stage of maturity and should have a tender texture. Tough pericarps will effect and downgrade this quality factor.

Flavor refers to the palatability of the product. The natural flavor of the sweet corn and the effects of added sugar and salt are considered in evaluating this factor.

Cream Style Corn

Cream style corn is prepared from clean, sound, succulent kernels of sweet corn. Cream style corn is made from kernels which are more mature than kernels used for cut corn. In this type of product, approximately 2/3 of the whole kernels are "creamed" or mashed and blended with 1/3 whole cut kernels. Another method is to use a mechanical cutter and scraper which cuts the kernels and scrapes the cob in one continuous operation. This second method may have more loose skin and smaller pieces of whole kernels but each are acceptable methods. The blended product is cooked in a sauce consisting of corn juice, water, salt, sugar and starch to promote smoothness. The color is classified as white or yellow (golden). There is no recommended drained weight for cream style corn. The product is packed 6/#10 cans per case. U.S. Grade standards are A, B and C and the Grade reference is CFR 7 Part 52.851.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned cream style corn must possess similar varietal characteristics which are not rated.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Color	10	8	6-7
Consistency	20	16-17	14-15
Absence of Defects	20	16-17	14-15
Tenderness and Maturity	30	24-26	22-23
Flavor	20	16-17	14-15

Grade A canned cream style corn must not score less than 90 points; Grade B and Grade C must score not less than 70 points.

Color. For Grade A, the cut kernels should possess a practically uniform color typical of tender sweet corn and the overall product should be bright and practically free from off-variety kernels.

Consistency refers to the viscosity of the product, to the degree of smoothness, and to the separation of free liquor. For Grade A, the canned cream style corn, after stirring and emptying from the container to a flat, dry surface, should possess a heavy cream-like consistency with not more than a slight appearance of curdling; form a slightly mounded mass; and at the end of two minutes after emptying on the flat, dry surface, there should be practically no separation of free liquor.

Absence of Defects refers to the degree of freedom from pieces of cob, husk, silk, or other harmless extraneous vegetable matter, from pulled kernels, and from discolored kernels or other defects. For Grade A, the presence of the above mentioned defects may not more than slightly affect the appearance or eating quality of the product.

Tenderness and Maturity. For Grade A, the kernels should be in the milk, early cream, or middle cream stage of maturity and have a tender texture. The pieces of the interior portions of corn kernels or ground kernels are characteristic of the sweet corn in the milk, early cream, or middle cream stage of maturity.

Flavor refers to the palatability of the product. The natural flavor of the sweet corn and the effects of added sugar and salt are considered in evaluating this factor.

Canned okra is available to the food service trades in #10 cans which have minimum drained weights of 60 oz. per can. There are two types of canned okra. One type is partially fermented in a salt brine before processing. The other type has not been fermented.

Canned okra is available in three styles: whole, with or without the caps; whole, salad style with the stems left attached; and cut, which means that the pods are cut transversely into pieces.

There are two U.S. grades applicable to canned okra: A & C. Top quality canned okra has virtually the same characteristics as top quality fresh or frozen okra. High quality is represented by tenderness, absence of tough fibers and absence of visible defects. However, the color of fresh and frozen okra, raw and cooked, is a much brighter green than canned okra. Although canned okra can be used in much the same manner as fresh and frozen, it is used mostly as an ingredient in soups and stews.

FOOD FACTS

IX - OKRA & TOMATOES, CANNED

According to U.S. standards, to be labeled "okra and tomatoes" in this order, the product must contain at least 50 percent by weight of whole or cut okra. The tomato ingredient can range from a minimum of 12.5 percent to a maximum of 50 percent. High quality okra and tomatoes are a result of the blending of high quality ingredients.

FOOD FACTS

IX - ONIONS, CANNED

Onions are used for heating and serving as side dishes or for flavoring meat and other dishes. They are packed whole, usually in three sizes and are normally purchased in #10 cans with drained weights and counts as follows:

In a high quality pack, the onions are uniform in size and well shaped. The color is bright, the bulbs are practically free from defects such as blemishes and scales, and are well trimmed. Moreover, the bulbs have firm textures and retain their confirmation without becoming soft or spongy.

Onions can be used cold as they come from the can to garnish meat platters. They can be heated and used as side dishes or to flavor and garnish other dishes. Do not cook onions to the point where they lose their firm texture.

Pickled onion, another form of canned onions, are packed from small bulbs, sometimes termed pearl onions. These are packed in brine, usually in glass jars of gallon, quart or pint sizes. Pickled onions are used for garnishing and flavoring salads and cocktails. They are usually listed by distributors under "pickles" rather than under "vegetables".

FOOD FACTS

IX - PEAS, CANNED

Peas - Early and Sweet Varieties

Peas are of two types: (1) Early (June) or Alaska varieties which have smooth skins and (2) sweet varieties which have wrinkled skins. Early (June) peas are so named because they mature in June whereas the sweet peas mature in late June or July. Peas for processing are grown in areas where the weather remains relatively cool throughout the harvest season, June and July. Approximately 82% of the peas are produced in the Midwest, 12% in the Northwest and 6% in the East. Peas are of two types: early (June) peas or Alaska which have smooth skins and sweet peas which have wrinkled skins. The early (June) peas mature (as its name) early in June.

Sweet peas are more oblong in shape than early peas. A cross between the two varieties produces exactly what would be expected, a rounder pea, mid-range in size and in maturity. Geneticists continue to improve on all strains of peas to develop more tender skins which will remain rupture free, so as to eliminate sediment or cloudy liquid.

Maturity and tenderness are the major considerations in the grading of peas, accounting for 50% of the total scores, higher than any other fruit or vegetable (except tomato puree and paste which have only 2 factors of grade). It is therefore a must that peas are harvested at their peak. Preharvest samples are taken and run through tendermeter and sieve-size machines. A few hours can mean the

difference of Grade A or B. Like corn, the conversion of sugar to starch is very fast. More mature peas will develop more starchy flavor characteristics. Maturity does not necessarily go hand-in-hand with size because the larger sweet varieties, up to 5 sieve will still maintain Grade A in maturity. The smaller June varieties will maintain Grade A maturity through 3 sieve.

A mechanical pea picker is used for picking peas. Peas are mechanically shelled in the field and taken quickly to the cannery where they are thoroughly washed to remove sticks, stems, pieces of pod, leaves, etc. Then they are sent through a grader which separates for size. The grader is a perforated, revolving drum with openings of various sizes.

The No. 1 sieve separates the smallest peas from the mass through openings $9/32$ inches in diameter. The No. 2 sieve is $10/32$ " in diameter; the No. 3, $11/32$ " and so on up to the No. 6 sieve which is $14/32$ ".

Next the peas are blanched in a revolving cylinder through water at pasteurizing temperature. This sets the color and stops further ripening, i.e., the conversion of the natural sugar into starch.

Quality grading follows. Each sieve size separately goes into a tank containing a moderately heavy salt solution. Peas which will float in this solution are the best quality. If it is indicated that the conversion from sugar to starch has barely begun, if at all, the canned peas will be grade A. Those which are harder and starchier are heavier and will sink in the salt solution. They will go into the Grade B or C packs.

Once again the peas are washed and conveyed to wide picking belt where inspectors pick out and discard broken, halved and otherwise imperfect peas, and any foreign material which has followed through.

One more washing and the peas go to the fillers. Here a brine solution of water, sugar and salt is added. Often the water is pure, deep-well water which has been softened to insure uniform brine and to remove the hard alkalies which have a tendency to toughen the peas' skins.

When the cans have been mechanically filled and closed, they are processed-cooked in sealed retorts for an average of 35 minutes at 240°F . The time and temperature of the processed varies by cane size, and by the variety and condition of the peas. Although there is no USDA recommendation for drained weight of canned peas, the average drained weight of a #10 can is usually between 70 and 72 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A, B and C and the Grade reference is CFR 7 Part 52.2281.

Factors of Quality. In addition to the factors listed below that are rated by score points, canned peas must possess similar varietal characteristics and must be considered for flavor. For Grade A, the product must have a good characteristic normal flavor and odor for the maturity and must be free from objectionable flavors and odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Clearness of Liquid	10	8	7
Color	10	7-8	5-6
Defects	30	24-26	21-23
Maturity and Tenderness	50	41-44*	37-40

*Peas that score 41-44 points cannot be graded higher than Grade B regardless of the total score.

Grade A peas must score at least 90 points; Grade B, 80 points and Grade C must score at least 70 points.

Liquor. For Grade A, the liquor may possess a slight cloudiness or tint of green; not more than a slight quantity of suspended material or sediment may be present; and the liquor may not be viscous.

Color. Canned peas must possess a color typical of tender peas of similar varietal characteristics, be bright and practically free from peas that materially detract from the overall appearance. This would include peas commonly referred to as blond or cream colored peas.

Defects refers to the degree of freedom from harmless extraneous vegetable material, pieces of peas, minor discoloration, spotted or otherwise discolored peas, and other defects which materially detract from the appearance or edibility of the product.

Maturity and Tenderness. This factor refers to the overall sweetness of the skin. A brine floatation test is used to determine the maturity and tenderness of the peas. In this test either 50 or 100 peas are dropped in either an 11% or 13% salt brine solution, and after 10 seconds the number of sinkers are counted and compared to the following USDA limits for Grade A.

GRADE A BRINE FLOTATION TEST

<u>VARIETY</u>	<u>SIZE</u>	<u>PERCENT SINKERS</u>	<u>PERCENT SALT SOLUTION</u>
Sweet	All	12 2	11 13
Early	All	20 2	11 13-1/2

Blackeye and Field Peas

This group of peas includes Blackeye and field (or Southern) peas or any varietal group or type of the field pea plant that has similar color and shape characteristics. In addition to Blackeye and field peas, this group includes "crowder peas", and "cream peas". Blackeye peas include "purple hull", i.e., those that have a light color skin, a definite eye and are bean-shaped. Crowder peas include "brown crowder", i.e., those that are nearly round in shape and have blunt ends. Cream peas include "white acre", i.e., those that have a solid cream colored skin and are generally bean shaped. Some of the peas are packed "with snaps" which means pieces of immature unshelled pods, usually about 5 percent, that are purposely included. Although there is no USDA recommended drained weight for canned blackeye and other peas, the average drained weight of a #10 can is 72 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A and C and the Grade reference is CFR 7 Part 52.1642.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned blackeye and field peas must possess similar varietal characteristics, normal flavor and odor which are not rated. For Grade A, the peas must be fairly young. Grade C peas can be more mature thus more mealy to the taste.

<u>Factors</u>	<u>Score Points</u>	<u>Grade C</u>
Color	20	10-14
Absence of Defects	40	30-34
Character	40	30-34

Grade A peas must score not less than 85 points and Grade C must score not less than 70 points.

Color refers to the brightness and uniformity of color typical of the variety of pea.

Absence of Defects refers to the degree of freedom from extraneous vegetable matter, loose skins and pieces of skins, loose cotyledons and pieces of cotyledons, mashed or broken units; and units blemished by pathological injury, insect injury, or other means.

Character refers to the tenderness and maturity of the peas.

FOOD FACTS

IX - PEAS & CARROTS, CANNED

The carrots in peas and carrots may be sliced, diced, double diced or cut into strips. Sweet peas must comprise not less than 50 percent and carrots not less than 25 percent by weight of the drained product; however, most canners pack a 50:50 ratio of peas to carrots. The usual method of packing this product is to freeze carrots (usually diced) in the fall and add them to peas harvested in the spring. The average drained weight of a #10 can of peas and carrots is 71 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A and B and the Grade reference is CFR 7 Part 52.6201.

Factors of Quality. In addition to the factors of grade that are graded by score points, the flavor and odor is considered. For Grade A, the product and each of the vegetables must possess a good characteristic, normal flavor and odor.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B*</u>
Color	20	16-17
Uniformity of Size	20	16-17
Absence of Defects	30	24-26
Character	30	24-26

*Canned peas and carrots that score in these ranges cannot be graded above Grade B regardless of the total score.

Grade A product must score not less than 90 points and Grade B must score not less than 80 points.

Color refers to the overall appearance of the product and to the color and brightness of the vegetables individually.

Uniformity of Shape and Size refers to the size and shape of the carrots. Peas may be of mixed sieves, but blend variations should not materially affect the appearance of the product.

Defects refers to the degree of freedom from harmless extraneous material, crushed, broken or otherwise damaged units, blemished, off-color carrots, and spotted or discolored peas.

Character refers to the tenderness and maturity of the peas and the tenderness and degree of freedom from stringy or coarse fibers in the carrots.

FOOD FACTS

IX - PEPPERS, GREEN & RED, CANNED

Canned green peppers may be of three types: green, red, or mixed (red and green). They are available as dices, halves, or cut into strips. When packed as halves, there are from 20 to 25 units (halves) in a No. 10 can. Diced peppers may be packed regular style, with a drained weight of approximately 83 oz. for a No. 10 can; or solid pack, with a drained weight of approximately 96 oz. There are no Grade standards for canned green or red peppers. The product is packed 6/#10 cans per case.

Potatoes, Sweet

There are two types of sweet potatoes grown in the U.S.: a dry flesh type which is light yellow in color and grown in the mid-Atlantic states; and a moist flesh type, orange in color, which grows in the South and the central valleys of California. This latter type is marketed in the industry as a yam. A true yam is grown only in tropical climates and is not related to the sweet potato. For labeling purposes, both the dry and moist-fleshed varieties must be called sweet potatoes in the list of ingredients, but the term "yams" may also be shown on the label of the moist variety.

Sweet potatoes are available as whole, halves, sections, pieces, mixture of two or more of the foregoing styles, or mashed. These styles are available either in vacuum or regular pack.

Whole Sweet Potatoes have the appearance of being essentially whole, irrespective of size although they should be relatively uniform in size and shape.

Cut Sweet Potatoes utilize the larger pieces of raw product by cutting them into more random size cuts that will fit into a can.

Mashed Sweet Potatoes are those that have been wholly comminuted or pureed. Mashed sweet potatoes are processed as solid pack without a packing medium. Other styles of sweet potatoes which are processed without a packing medium are vacuum packed. Regular pack is processed with a liquid, either water or syrup.

The average drained weight of a #10 can of liquid-pack sweet potatoes is 72 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A and B and the Grade reference is CFR 7 Part 52.2041.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned sweet potatoes must be considered for flavor and odor which are not rated. Good flavor and odor (for Grade A) means a good distinctive flavor and odor which is characteristic of properly prepared and processed sweet potatoes that are free from objectionable odors of any kind.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B</u>
Color	30	24-26*
Size and Shape**	20	16-17
Defects	30	24-26*
Character	20	16-17

* Product that falls into this category cannot be graded higher than Grade B.

** or consistency for solid pack only.

Grade A canned sweet potatoes must score no less than 90 points and Grade B, not less than 80 points.

FOOD FACTS

IX - POTATOES, SWEET & WHITE, CANNED

Color. The evaluation of color should be made as quickly as possible after opening the container. Color is based on the degree of brightness, intensity of color, degree of uniformity, and whether the sample unit is of color typical of a similar varietal group.

Uniformity of Size and Shape refers to the uniformity of the cut and whole unit. The maximum allowable weight ratio of the largest unit to the second smallest unit should be no greater than 3:1 for Grade A, and 4:1 for Grade B.

Consistency refers to the firmness of the sweet potato mass characteristics and separation of free liquid. (16-17 points is limiting rule for solid pack Grade B., i.e., if the product scores within this range, it cannot be graded above Grade B.)

Defects refers to the relative degree of freedom from blemishes, from fibrous ends and rootlets, insect injury, sand silt, grit, peel, and harmless plant material.

Character refers to the texture and condition of the flesh, the relative degree of freedom from internal tough or coarse fibers, the tenderness of the sweet potato, and the tendency of the sweet potato to retain original conformation.

Potatoes, White

Canned white potatoes are available whole, sliced, diced, shoestring (French style or Julienne), pieces or a mixture of two or more styles. Sizes of whole potatoes vary from tiny to large (1 to 4) as follows:

- | | |
|------------|-------------------------------|
| 1 - Tiny | Less than 1 inch in diameter |
| 2 - Small | 1 to 1-1/2 inches in diameter |
| 3 - Medium | 1-1/2 to 2 inches in diameter |
| 4 - Large | Over 2 inches in diameter |

Whole potatoes are packed in a range of sizes with counts in a No. 10 can as follows: 65-75, 100-110, 135-145, 200-225, and 280-300. Canned whole peeled potatoes may be heated and served as they come from the can or prepared as hash browns or as french fries.

A No. 10 can of whole potatoes has an average drained weight of: whole - 74 oz.; sliced - 75 oz.; and diced - 76 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A and B and the Grade reference is CFR 7 Part 52.1811.

FOOD FACTS

IX - SAUERKRAUT, CANNED

Sauerkraut is cabbage which has been pickled in brine. It is available in two forms: shredded and chopped. It is purchased in #10 cans which should have a drained weight of 80 oz.

Sauerkraut can be purchased by U.S. grades, which are A, B, and C. A pack which rates U.S. Grade A has a bright, uniform, typical color which is white to light cream, has a good kraut flavor, the pieces are well cut, and is practically free from such defects as presence of cabbage core material or pieces which are discolored or damaged.

FOOD FACTS

IX - SAUERKRAUT, CANNED

The flavor of sauerkraut can be adjusted in the kitchen. To retain the normally tart flavor of kraut, barely heat to a warm temperature or serve it cold as it comes from the can. For milder flavor, boil kraut for a longer period of time or cook with other foods. Rinsing kraut with boiling water also produces a milder flavor and shortens cooking time.

Sauerkraut is very versatile. It can be served with meats such as franks, or used hot or cold to flavor sandwiches such as hot dogs or corned beef.

FOOD FACTS

IX - SPINACH, CANNED

Canned spinach is available in three styles: (1) whole leaf (with adjoining portion of the stem); (2) cut leaf (sliced) whereby the whole leaf is sliced into large pieces 3-4" or cut predominantly into strips; or (3) chopped. California varieties are usually packed whole and account for approximately 30% of the pack.

Although there is no USDA recommendation for drained weight of spinach, the average drained weight of a #10 can is between 58 and 60 oz. for all styles. The product is packed 6/#10 cans per case. U.S. Grade standards are A and B and the Grade reference is CFR 7 Part 52.1901.

Factors of Quality. The grade of canned spinach is based on requirements for product characteristics with respect to the following:

1. flavor and odor
2. color
3. character
4. stem material
5. damage
6. harmless extraneous material

Defects for each of the quality factors shown above are classified as minor, major or severe and are counted. They must not be greater than the total shown below.

Defect Tolerance Limits for Canned Spinach
Expressed as Acceptable Quality Level
(average defects per 30 oz. Drained Weight)

<u>Style</u>	<u>Grade</u>	<u>Total</u>	<u>Minor</u>	<u>Major</u>	<u>Severe</u>
Whole	Grade A	12.0		4.5	0.75
	Grade B	36.0		12.0	1.5
Chopped	Grade A	45.0	6.0	4.5	0.75
	Grade B	120.0	18.0	12.0	1.5

Catsup

Pack: Catsup ("ketchup" and "catchup") is the liquid obtained from mature red or reddish tomatoes. It is usually packed in 6/#10 cans although at least one packer offers a three gallon pack. Catsup is also available in portion packs of 9 and 11 grams with packs of 200, 500, and 1,000 packets per case.

The percentage of total solids in catsup will determine the difference between Grade A and Grade B. Grade A must have a total solids content that is not less than 33 percent by weight and Grade B must have not less than 29 percent by weight.

Note from the table which follows that the scoring factor for both Grade A and B are exactly the same, with a minimum score of 85 points. Grade C must have a minimum score of 70 points. The Grade reference is CFR 7 Part 52.2101

Factors of Quality: The factors of quality, scoring points and minimum points for Grade A, B and C are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grades A&B Minimum</u>	<u>Grade C Minimum</u>
Color	25	21	17-20
Consistency	25	22	18-21
Absence of Defects	25	21	18-21
Flavor	25	21	17-20

Color refers to the amount and intensity of red in the tomato catsup. Currently this factor is determined by using the Munsell Color Disc method. Many manufacturers are pushing for a method which will remove the subjectivity from this factor.

Consistency refers to the viscosity of the product and the tendency to hold its liquid portion in suspension. For Grades A and B, the catsup may not show more than a slight separation of free liquid when poured on a flat grading tray. Viscosity is measured by using the Bostwick Consistometer method¹ and maximum flow is defined by grade as follows: Maximum Bostwick Allowable (cm) for Grade A - 9, Grade B - 9, and Grade C - 14.

Absence of Defects refers to the degree of freedom from defects such as dark specks or scale-like particles, seeds, particles of seed, tomato peel, core material, or other similar substances. To meet U.S. Grades A and B, the catsup should be practically free from defects so that any defect present does not more than slightly affect the appearance or eating quality of the product.

Flavor. For Grades A and B, the catsup should have good flavor. For this purpose, the USDA defines good flavor as a good, distinct flavor characteristic of good quality ingredients and is free from scorching or any objectionable flavor of any kind.

1. Over simplified, this method uses a smooth flat trough with one inch walls and a gate which forms a one inch square sample area. Product diluted to 12% solids and at 20°C is placed in the sample area and the gate opened and timed for 30 seconds then measured to the nearest 0.1 cm.

Tomato Paste

Tomato paste is prepared from the pulp of mature, sound, red tomatoes. Tomato paste must contain at least 24% natural tomato soluble solids and is available in several degrees of concentrations as follows:

Extra Heavy	39.3% or more of soluble solids
Heavy	32 to 39.3% or more of soluble solids
Medium	28 to 32% or more of soluble solids
Light	24 to 28% or more of soluble solids

If soluble solids are below 24%, the product is labeled "tomato puree."

For all practical purposes, only the latter two, Light and Medium, are available to the food service trades.

Tomato paste may be used as a base in the preparation of many tomato products such as puree, sauce or even juice by mixing with water. For example, 52 pounds of light paste (26%) can be mixed with 48 pounds of water to produce a 1.06 puree containing 12.9% natural tomato solids. Eastern manufacturers of tomato sauce can buy tomato paste from California, reconstitute it, and add spices or seasonings and compete price-wise with California manufacturers who must pay extra freight charges to ship the water in the sauce.

Grades of tomato paste are A and C and the reference standard is CFR 7 Part 52.5041.

Factors of Quality. Grade A tomato paste must have a good flavor and odor. This factor (not scored) is determined on undiluted samples and also after dilution with water to between 8 and 9 percent. Good flavor and odor means a distinct tomato paste flavor characteristic of ripe good quality tomatoes. Factors which are scored are shown below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Minimum*</u>
Color	50	40-44
Defects	50	40-44

*Product scoring in this classification cannot be graded higher than Grade C regardless of the total score.

Grade A tomato paste must score not less than 90 points and Grade C, 80 points.

Color refers to the amount of red in the product. Currently this is analytically determined by using a Munsell Color Disc test. Electronic color meters approved by the USDA may also be used with an appropriate conversion formula.

Defects refers to the degree of freedom from defects such as dark specks or scale-like particles, seed or objectionable particles of seeds, objectionable tomato peel, harmless extraneous material, or any other similar substances. For Grade A, any defects present should not more than slightly affect the appearance or usability of the product.

Tomato Puree

Tomato puree is prepared from the pulp of mature, sound, red tomatoes. Tomato puree is concentrated to at least 8% and not more than 24% natural tomato soluble solids and is available in several degrees of concentration, as follows:

<u>CONCENTRATION</u>	<u>SOLUBLE SOLIDS</u>	<u>SPECIFIC GRAVITY</u>
Extra Heavy	15.0 to 24.0%	1.070
Heavy	11.3 to 15.0%	1.060
Medium	10.2 to 11.3%	1.045

The degree of concentration (or specific gravity) is the ratio of the weight of the tomato puree to an equal volume of water.

Tomato puree with a specific gravity of 1.045 is equivalent to approximately 1.8 No. 10 cans of whole tomatoes; a specific gravity of 1.060, 2.4 No. 10 cans of whole tomatoes and puree with a specific gravity of 1.070 is equivalent to 2.8 No. 10 cans of whole tomatoes.

Texture. Tomato puree may be obtained either as fine texture which has smooth uniform finish or as coarse texture which has a slightly granular finish. Coarse texture is preferred by the food service trade.

Tomato puree is packed 6/#10 cans per case. The grades are A and C and the reference is CFR 7 Part 52.5081.

Factors of Quality. Grade A tomato puree must have a good flavor and odor. This factor (not scored) is determined on undiluted samples and also after dilution with water to between 8 and 9 percent. Good flavor and odor mean a distinct tomato paste flavor characteristic of ripe good quality tomatoes. Factors which are scored are as follows:

<u>Factors</u>	<u>Score Points</u>	<u>Grade C Minimum*</u>
Color	50	40-44
Defects	50	40-44

*Product scoring in this classification cannot be graded higher than Grade C regardless of the total score.

Grade A tomato puree must score not less than 90 points and Grade C, 80 points.

Color refers to the amount of red in the product. Currently this is analytically determined by using a Munsell Color Disc test. Electronic color meters approved by the USDA may also be used with an appropriate conversion formula.

Absence from Defects refers to the degree of freedom from dark specks or scale-like particles, seed or objectionable particles of seeds, objectionable tomato peel, harmless extraneous material, or any other similar substances. For Grade A, any defects present should not more than slightly affect the appearance or usability of the product.

Tomato Sauce

Tomato sauce is prepared from the pulp of mature, sound, red ripe tomatoes. It is the least concentrated of the tomato products. There are no requirements for soluble solids for this product. Additional seasonings, such as sugar, corn syrup, vinegar, onion and garlic are added.

Pack: Tomato sauce is packed 6/#10 cans to the case. The grades are A and C and the reference is CFR 7 Part 52.2371. Grade A product must score not less than 85 points and Grade B, not less than 70 points.

Factors of Quality. The factors of quality, score points and minimum points for Grade C are listed below:

<u>Factors</u>	<u>Score Points</u>	<u>Grade A Minimum</u>	<u>Grade C Minimum*</u>
Color	25	21	17-20
Consistency	25	22	18-21
Defects	25	21	18-20
Flavor	25	21	17-20

* Product that scores in this classification shall not be scored above Grade C regardless of the total score.

Color in tomato sauce is currently determined by the Munsell Color/Disc method. The color for Grade A product should be typical of tomato sauce made from well-ripened tomatoes which have been properly prepared and processed.

Consistency refers to the viscosity of the product and the tendency of the product to hold its liquid portion in suspension. Consistency is determined using the Bostwick Consistometer Method¹ Limits on consistency for the various grades are shown below. For Grade A, there should be no more than a slight separation of free liquid when the product is poured on a flat grading tray. Maximum Bostwick value for Grade A is 14 cm and for Grade B, 18 cm.

Absence from Defects refers to the degree of freedom from defects such as dark specks or scale-like particles, seeds, particles of seed, tomato peel, core material, or other similar substances. This factor is evaluated by observing a layer of the product on a smooth, white, flat surface.

Flavor. For Grade A, the product should possess a good, distinctive flavor characteristic of good quality ingredients. Such flavor should be free from scorching or any other objectionable flavor of any kind.

1. Over simplified, this method uses a smooth flat trough with one inch walls and a gate which forms a one inch square sample area. Product diluted to 12% solids and at 20°C is placed in the sample area and the gate opened and timed for 30 seconds then measured to the nearest 0.1 cm.

Tomatoes, Whole, Peeled

Whole peeled tomatoes are produced almost totally in California because of the consistent quality and delicate flavor balance. California tomatoes are sweeter than the East Coast and Midwest tomatoes which have a definite acid taste.

Whole tomatoes are prepared from mature tomatoes of red or reddish varieties. Drained weight and wholeness (along with other characteristics) are factors of grade of canned tomatoes. To reach the minimum drained weight for the Grade A, some tomatoes become split or slightly broken; therefore, the product is downgraded. (To Grade A, not less than 95 percent by weight of the drained tomatoes must be whole or almost whole.) Because of this high requirement, the highest grade of whole tomatoes marketed in the industry is Grade B. The average drained weight of whole peeled tomatoes is 66 oz. for Grade B and 58 oz. for Grade C. The grade reference is CFR 7 Part 52.5161.

Factors of Quality. In addition to the factors of grade listed below that are rated by score points, canned whole peeled tomatoes must be considered for flavor which is not rated.

<u>Factors</u>	<u>Score Points</u>	<u>Grade B Minimum</u>	<u>Grade C Minimum</u>
Drained Weight	20	16-17	14-15
Wholeness	20	16-17	14-15
Color	30	24-26	21-23
Defects	30	24-26	21-23

Grade B whole peeled tomatoes must score not less than 80 points and Grade C, not less than 70 points.

Drained Weight is based on the drained weight index of the sample unit. Drained weight index is determined as follows:

Drained Weight Index = weight of drained tomatoes
divided by the capacity of container multiplied by 100.

Capacity of container is defined as the weight of distilled water at 20° which a sealed container will hold. For No. 10 cans 109.45 ounces drained weight is generally used as this figure.

Wholeness refers to the conformation of the tomato and the weight of the pieces of tomato that remain on the screen after draining. Whole or almost whole tomatoes are considered acceptable under this factor as long as:

1. the contour of the tomato is not materially affected by coring, trimming, or other means.
2. the tomato may be cracked or split but not to the extent that there is material loss of seed, placenta, or serious opening in the seed cavity.

3. the unit may be readily restored to, and handled in, practically the original shape. Minimum percentages of whole or almost whole tomatoes for the various grades are: Grade B - 70%, Grade C less than 70%.

Color. Determination of color for canned tomatoes is done using the Munsell Color Disc method as defined by the USDA. For Grade B, the canned tomatoes should have reasonably good color, not more than 10% yellow shoulders, and no units which have a distinct green color.

Absence of Defects refers to the degree of freedom from tomato peel, objectionable core material, blemished areas, discolored areas, harmless extraneous materials, and other similar defects.

Tomatoes, Crushed

Tomatoes which fall into the Grade C classification for wholeness may be sold under may be sold under various designations. These tomatoes can be used in dishes where whole tomatoes are neither required or desired. In fact many recipes call for "crushed" tomatoes. To fill this demand and to utilize tomatoes which are less than whole, California packers market a product referred to in the trade as "California Style". There are no grade standards for California style (or Crushed Tomatoes). Packers, however, may market under a specific label tomatoes which score in the grade B range for color and defects but not for wholeness nor drained weight, and pack under another label products which fall below the Grade B standards on color and defects as well as well as wholeness and drained weight.

To acquire the product desired, a buyer should select a label which suits his needs and stick with it.

Canned mixed vegetables are prepared from the frozen vegetable because of the differences in growing seasons. Vegetables used are cut green or wax beans, lima beans, diced carrots, whole kernel corn, and either sweet or early peas. There are no grade standards for canned mixed vegetables although there are standards for frozen mixed vegetables. Packers are not obligated to use the frozen standards. Grades are based on the grades of individual vegetables. Although there is no USDA recommendation for drained weight of mixed vegetables, the average drained weight of a #10 can is usually between 65 and 70 oz. The product is packed 6/#10 cans per case. U.S. Grade standards are A, B and C for frozen product, CFR 7 Part 52.2131.

FOOD FACTS

IX - VEGETABLES, MIXED, CANNED

The ratios of mixed vegetables, based on the standards for frozen, are as follows:

- A three vegetable pack requires a mixture in which any one vegetable is not over 40 percent by weight;
- A four vegetable pack requires a mixture in which none are less than 8 percent nor more than 35 percent by weight;
- A five vegetable pack is the same as a four vegetable pack except that none can be more than 30 percent.

FOOD FACTS

IX - STORAGE AND CARE, VEGETABLES, CANNED

The best advice for storing canned vegetables is to "store in a cool dry place." If humidity is too high, condensation might cause cans to rust at the seams. High heat might cause more rapid deterioration of product quality. Canned foods which show changes in texture and consistency of the product may have been frozen in-transit or in storage prior to arrival.

See subsequent section on "Storage and Care of Food Products."

NET WEIGHT, DRAINED WEIGHT AND AVERAGE NUMBER OF SERVINGS IN NUMBER 10 CANS OF FRUITS AND VEGETABLES¹

Fruits	Count ²	Average Net Weight	USDA Recommended Drained Weight	Average Servings ³ Per Can	
				2 oz.	3 oz.
Applesauce		6 lb.12 oz.	NA	54	35
Apples, Sliced		6 lb. 8 oz.	96 oz.	6-9"	Pies
Apple Rings, Spiced & Colored	85/90	6 lb.10 oz.	53 oz.	1	2
Apricot Hlvs. Unpeeled Hv. Syrup	108/130	6 lb.12 oz.	62 oz.	4	4
Apricot Hlvs. Unpeeled Hv. Syrup	86/108	6 lb.12 oz.	62 oz.	4	4
Cranberry Sauce, Jellied		6 lb.11 oz.	NA	58	39
Cherries,Red Tart Pitted, Water		6 lb. 6 oz.	72 oz.	6-9"	Pies
Cherries, Light Sweet Hv. Syrup		6 lb.12 oz.	66.5 oz.	33	22
Cherries, Dark Sweet Hv. Syrup (Pitted or Unpitted)		6 lb.12 oz.	66.5 oz.	33	22
Figs - Kadota Hv. Syrup	70/90	6 lb.14 oz.	66.0 oz.	3	3
Fruit Cocktail Hv. Syrup		6 lb.12 oz.	71 oz.	35	23
Fruit Mix - Tidbits Lt.Syrup		6 lb.10 oz.	71 oz.	35	23
Fruits for Salad Hv. Syrup		6 lb.12 oz.	64.5 oz.	Approx	25
Grapes, Thompson Seedless Hv. S.	450/525	6 lb.12 oz.	62 oz.	31	20
Peaches Yel. Cling Hlvs. Hv. Syp.	25/30	6 lb.12 oz.	66.5 oz.	1	1
Peaches Yel. Cling Hlvs. Hv. Syp.	30/35	6 lb.12 oz.	66.5 oz.	1	1
Peaches Yel. Cling Sliced Hv. Syrup		6 lb.12 oz.	66.5 oz.	33	22
Peaches Yel. Cling Diced Hv. Syrup		6 lb.12 oz.	70.0 oz.	35	23
Pear Halves Hv. Syrup	30/35	6 lb.10 oz.	64.1 oz.	1	1
Pear Halves Hv. Syrup	35/40	6 lb.10 oz.	64.1 oz.	1	1
Pear Sliced Hv. Syrup		6 lb.10 oz.	65.5 oz.	33	22
Pear Diced Hv. Syrup		6 lb.10 oz.	67.0 oz.	33	22
Pineapple - Sliced Hv. Syrup	52	6 lb.12 oz.	63.5 oz.	2	2
Pineapple - Sliced Hv. Syrup	66	6 lb.12 oz.	63.5 oz.	2	2
Pineapple - Sliced Hv. Syrup	100/110	6 lb.12 oz.	63.5 oz.	3	3
Pineapple Tidbits Hv. Syrup		6 lb.12 oz.	69.0 oz.	34	23
Pineapple Chunks Hv. Syrup		6 lb.12 oz.	90.0 oz.	34	30
Plums - Purple Whole	70/80	6 lb.12 oz.	62.0 oz.	2	2
Prunes - Prepared Hv. Syrup	190/210	6 lb.12 oz.	70.0 oz.	8	8

¹ Source, Canned Foods Specification Manual - NIFDA² As may be applicable.³ School lunch patterns require that two or more servings of vegetable or fruit or both total 1/2 cup (ages 1-8, Preschool - Grade 3), thus two 2 oz. servings satisfy this requirement. The 3 oz. serving meets the requirement for ages 9 and over, Grades 4 - 12.

FOOD FACTS

CANNED FRUITS AND VEGETABLES

NET WEIGHT, DRAINED WEIGHT AND AVERAGE NUMBER OF SERVINGS IN NUMBER 10 CANS OF
FRUITS AND VEGETABLES (Con't.)

Vegetables	Count	Average Net Weight	USDA Recommended Drained Weight	Average Servings ² Per Can	
				2 oz.	3 oz.
Beans, Whole Green		6 lb. 5 oz.	57.5 oz.	28	19
Beans, French Style Green		6 lb. 5 oz.	59.0 oz.	29	20
Beans, Cut Green 3,4,5 Sv.		6 lb. 5 oz.	60.0 oz.	30	20
Beans, Cut Wax 4 Sv.		6 lb. 5 oz.	60.0 oz.	30	20
Beans, Tiny Green Lima		6 lb. 9 oz.	72.0 oz.	36	24
Beans, Dark Red Kidney		6 lb. 12 oz.	73.0 oz.	36	24
Beets, Small Whole	150/199	6 lb. 8 oz.	69.0 oz.	34	23
Beets, Sliced Medium		6 lb. 8 oz.	68.0 oz.	34	23
Beets, Diced		6 lb. 8 oz.	72.0 oz.	36	24
Blackeyed Peas		6 lb. 9 oz.	72.0 oz.	36	24
Carrots, Whole	100/over	6 lb. 9 oz.	68.0 oz.	34	23
Carrots, Sliced		6 lb. 9 oz.	68.0 oz.	34	23
Carrots, Diced		6 lb. 9 oz.	72.0 oz.	36	24
Celery Cuts		6 lb. 6 oz.	64.0 oz.	32	21
Collard Greens		6 lb. 2 oz.	58.4 oz.	29	20
Corn, Golden Cream Style		6 lb. 10 oz.	NA	53	35
Corn, Golden Whole Kernel		6 lb. 10 oz.	70.0 oz.	35	23
Corn, Golden Whole Kernel		4 lb. 11 oz.	65.0 oz.	32	21
Hominy, Golden or White		6 lb. 12 oz.	72.0 oz.	32	21
Mustard Greens		6 lb. 2 oz.	58.4 oz.	29	20
Peas, Fancy 2,3,4 Sv.		6 lb. 9 oz.	NA	35	23
Peas, Ex. Std. 2,3,4,5 Sv.		6 lb. 9 oz.	NA	35	23
Peas, Std. 4,5,6 Sv. & Ungraded		6 lb. 9 oz.	NA	35	23
Pork & Beans		6 lb. 14 oz.	NA	55	36
Potatoes, Whole	100/110	6 lb. 6 oz.	74.0 oz.	35	25
Pumpkin		6 lb. 10 oz.	NA	6-9"Pies	
Sauerkraut, Shredded & Chopped		6 lb. 3 oz.	80.0 oz.	40	26
Spinach, Leaf, Chopped & Sliced		6 lb. 2 oz.	58.4 oz.	29	20
Turnip Greens		6 lb. 2 oz.	58.4 oz.	29	20

NET WEIGHT, DRAINED WEIGHT AND AVERAGE NUMBER OF SERVINGS IN NUMBER 10 CANS OF FRUITS AND VEGETABLES (Con't.)

Tomato Products	Count	Average Net Weight	USDA Recommended Drained Weight	Average Servings Per Can	
				2 oz.	3 oz. ¹
Chili Sauce		7 lb. 3 oz.	NA	*	
Tomatoes, Crushed or Ground		6 lb. 9 oz.	NA	*	
Tomatoes, Whole Peeled, Ex.Std.		6 lb. 6 oz.	63.5 oz.	34	24
Tomatoes, Whole Peeled, Std.		6 lb. 6 oz.	54.7 oz.	34	24
Tomatoes, Stewed		6 lb. 6 oz.	59.0 oz.	30	20
Tomato Catsup 26% Concentration		6 lb.15 oz.	NA	*	
Tomato Catsup 29% Concentration		7 lb.	NA	*	
Tomato Puree 1.045 Spec. Gravity		6 lb. 8 oz.	NA	*	
Tomato Puree 1.06 Spec. Gravity		6 lb.10 oz.	NA	*	
Tomato Sauce		6 lb.10 oz.	NA	*	

* These products are normally used as ingredients, therefore the number of servings depends upon how the product is used.

GROUP X - SUPPORT ITEMS

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Apples

Dried and dehydrated apples are used for pies and cobblers and for other cooking purposes. Dehydrated apples differ from dried apples in that they have a much lower moisture content. Whereas dried apples can have a moisture content of 24 percent by weight, according to U.S. Standards, dehydrated apples can have not more than 3.5 percent moisture.

Dried and dehydrated apples are available in several styles. "Pie pieces", slices and wedges are used for making pies and cobblers. Slices can also be used as apple rings to garnish main courses. Apple cuts and pieces are used for making applesauce, fritters and other cooking purposes. Apple flakes (dehydrated) are used as a flavoring for fritters and other cooked dishes.

Dried apples can be purchased in accord with U.S. Grades A, B or C. There are two grades for dehydrated apples: A and B. High quality dried and dehydrated apples are practically free from defects such as seeds, carpel tissue, dark particles from the blossom end, or other extraneous material. Good quality is further indicated by uniformity of sizes of pieces and a lack of broken or cut pieces. A bright color and a firm distinct odor are also indications of high quality.

Dried apples are packed in 24 pound plastic bags which, in turn, are inserted into fiberboard cartons, although sometimes wooden boxes are used. They have a good keeping quality and can be stored at room temperature (70°F) for up to 12 months. However, once a carton has been opened, be sure that the unused portion is completely sealed and placed under refrigeration.

Dehydrated apples are packed in hermetically sealed cans or flexible packages and have a shelf life of 24 months at room temperature.

Apricots

Dried apricots are used for pies and cobblers and for cooking and serving as side dishes. Dehydrated apricots are similar to dried apricots except they have a much lower moisture content. Whereas dried apricots can have a moisture content of 25 to 26 percent by weight, according to U.S. Standards, dehydrated apricots can have only 3.5 to 5.0 percent, depending on the size of the pieces. A large percentage of dehydrated apricots are used in manufacturing preserves, purees, etc.

Dried apricots are packed in 25 pound film bags which are inserted in fiberboard boxes. Dehydrated apricots for food service are packed in #10 hermetically sealed cans or special film bags. Packaged dried and dehydrated apricots can be held for several months at room temperature (70°F), but when opened, the contents must be used right away. Packages of residual apricots must be sealed and placed in a refrigerator where they may keep for a few weeks.

Dried and dehydrated apricots can be purchased in several U.S. Grades. There are four U.S. Grades for dried apricots: A, B, C, and D. The two normal grades for dehydrated apricots are A and B. The quality characteristics for dried and dehydrated fruit are about the same as those described for frozen apricots, particularly as regards the character of the fruit, absence of defects, uniformity of size of pieces, and color of the pack.

Dried apricots can be purchased in whole pitted, halves or sliced form. Packs, except for slices, can be labeled according to size as follows:

<u>Size Designation</u>	<u>Size Designation</u>	<u>Diameter in Inches*</u>
No. 1	Jumbo	1-3/8 or more
No. 2	Extra Fancy	1-1/4 to 1-3/8
No. 3	Fancy	1-1/8 to 1-1/4
No. 4	Extra Choice	1 to 1/8
No. 5	Choice	13/16 to 1
No. 6	Standard	Less than 13/16

*Measurement across the face of the apricot half when restored to its normal shape.

Dehydrated apricots are available in nugget-type pieces, diced or sliced.

Peaches

Dried and dehydrated peaches are used for making pies and cobblers and as ingredients in cooking other foods. Dehydrated peaches are similar to dried peaches except that they have a much lower moisture content. Whereas dried peaches can possess as much as 25 percent moisture, according to U.S. Standards, dehydrated peaches can possess a range of 3 to 5 percent, depending on the type of cut. Dehydrated peaches are used extensively in the manufacturing of preserves and purees.

Dried peaches are packed for the food service trade in 25 pound film bags which are inserted in fiber board boxes. Dehydrated peaches are packed in #10 hermetically sealed cans (without liquid medium) or sealed in special film bags. Properly packaged dried and dehydrated peaches can be stored for several months at room temperature (70°F) without loss of quality. However, once a package has been opened, it should be resealed and used within a week or so. Opened packages of dried peaches should be placed in a refrigerator to avoid contamination.

Dried peaches are produced from fresh peaches which have been pitted and halved. They are made from freestone and clingstone varieties. The various sizes of dried peaches are as follows:

<u>Size Designation</u>	<u>Size Designation</u>	<u>Diameter in Inches*</u>
No. 1	Jumbo	2 or over
No. 2	Extra Fancy	1-3/4 to 2
No. 3	Fancy	1-1/2 to 1-3/4
No. 4	Extra Choice	1-3/8 to 1-1/2
No. 5	Choice	1-1/8 to 1-3/8
No. 6	Standard	Less than 1-1/8

*Measurement across the face of the peach half when restored to its normal shape.

Dehydrated peaches are produced in four cut styles: nugget-type of 5/8 inches or smaller, pieces of irregular shapes which are 5/8 inches or smaller, diced cube shaped units, and slices which are parallel-cut strips of irregular shapes and thickness.

Dried peaches can be purchased in accord with U.S. Grades A, B, C and D and dehydrated peaches in Grades A and B. High quality dried or dehydrated peaches have a good texture and bright color and pieces are of uniform size. Quality is downgraded by the presence of defects such as discolored spots, pieces of peel and seeds, damaged pieces, broken pieces, or tough units.

Prunes

The prune belongs to the same species (*Prunus domestica*) as the plum, but as far as the food service industry is concerned, the two fruits are considered to be distinctly different items. Prunes make popular desserts or appetizers. They are sometimes made into purees and used as ingredients in other desserts such as "prune whip". Although fresh prunes can be purchased from June through September as prune plums, they are seldom used by the food service industry in this form.

Dried prunes can be purchased by the pound and rehydrated by boiling or steaming. They are available whole pitted and whole unpitted. They can be purchased in three different types:

Type I	French, Robe, or a mixture of French and Robe.
Type II	Italian
Type III	Imperial, Sugar, or a mixture of Imperial and Sugar.

Dried prunes are available in a range of sizes as follows:

<u>Size</u> <u>Description</u>	<u>Prunes Per Pound</u> <u>Not More Than</u>
Extra Large	43
Large	53
Medium	67
Small	87

They can be purchased in three U.S. Grades, A, B, and C. High quality dried prunes are thick fleshed and possess tender skins. The pack is practically free from cracked or damaged prunes or from any extraneous or foreign material.

Raisins

Raisins are derived from grapes which have been sun-dried for about two weeks, stacked for further drying and stored in boxes. Most raisins are made from yellow varieties of grapes which have tender skins. Both seedless and seeded varieties are used for this purpose. However, the seeds are removed from some raisins while processing. Two of the most popular varieties are the Thompson Seedless (Sultanina) and the Muscat, which is available both as seeded (with the seed left in) and seedless.

Raisins can be purchased in three size classifications: Select, Small (or midgets) and Mixed (sizes). The Muscat variety is larger than the Thompson Seedless variety. Raisins can be purchased in three U.S. Grades: A, B, and C. A top quality pack has a minimum of 74 percent moisture, consist of well fleshed fruit, has a good, typical color, and is practically free from defects such as pieces of stem, underdeveloped or damaged raisins, seeds, or grit. The food service trades normally purchase raisins either in a 15 oz. box or in 30 pound packs, which often are referred to as bakery packs.

Store opened packages of raisins in a refrigerator or other place where infestation cannot occur.

Dried beans, peas and lentils contain so much protein that they are considered part of the meat group in the basic food groups. They are recognized as a meat substitute, not only for their protein, but for their vitamins, iron and food energy as well. However, most food service operators serve cooked dried beans as a side dish, or combined with meat as a main course.

Limas, navy beans, lentils, white or red kidney beans, split peas, and blackeye peas have a different taste and a host of different recipes can be used to vary them pleasantly. Not all varieties of dried beans are popular in all parts of the country. In the West, red beans and pintos are used for Mexican dishes, whereas in New England, pea and navy beans are favored for baking. The most common beans are as follows:

Black beans: These are used in thick soups and in Oriental and Mediterranean dishes.

Blackeye peas: This southern favorite is actually a bean but has different names in different parts of the country. Sometimes they are called "cow peas." Small, oval shaped and creamy white with a black spot on one side, they are used primarily as a vegetable dish.

Chick peas: Generally known as Garbanzo beans, they are nut flavored and often are pickled in vinegar and oil for salads. They can be used as a vegetable dish in the unpickled form. Similar beans are cranberry and yellow eye beans.

Great Northern beans: These are medium sized, oval and white, and are used in soups, salads, casserole dishes and home baked beans.

Kidney beans are large red, or white in color and kidney shaped. They are popular for chili con carne and add zest to salads and many Mexican dishes.

Lima beans: Broad and flat, they come in different sizes, but size does not affect quality. They make an excellent side dish and can be used in casseroles as a main course.

Navy beans: This category includes Great Northern and other small white beans. They are national favorites.

Pea beans: Small, oval and white, these are a favorite for home baked beans, soups and casseroles. They hold their shape even when cooked until tender.

Pinto beans: In the same family as kidney and red beans, beige colored and speckled, they are used mainly in salads and chili.

Red and Pink beans: Used in many Mexican dishes and chili, they are related to the kidney bean.

FOOD FACTS

X - BEANS, DRIED

Dry peas: These may be green or yellow, but the green type has a more distinctive flavor. They are available either whole or split and are used to make soups, casseroles, vegetable dishes, dips and hors d'oeuvres. Green and yellow whole peas and green and yellow split peas, even though they may vary in taste a little, are used interchangeably in many recipes.

Storage and Care

Store packaged dried beans in a cool, dry place. Once a package is opened, put the remaining contents in an airtight container to keep out moisture, insects, and other contaminants. Do not mix the contents of packaged beans purchased at different times because older beans take longer to cook than fresher ones. Cooked dried beans will keep well over a week when covered and held under proper refrigeration.

Before cooking dried beans, examine them carefully for foreign matter since occasionally a small stone or other object might slip past the most careful plant inspection.

Some experts insist on soaking dried beans before cooking, while others say it is not necessary. Both ways give good results. All you have to remember is that beans that are not soaked take a little longer to cook. Boil them for two minutes first, if you want to soak for only an hour, or soak overnight, whichever is more convenient. If you have any doubts about which method to use, check the instructions on the package.

One cup of dried beans usually makes 2 or 3 cups after cooking, depending on the variety. If you add acid ingredients such as tomatoes, catsup or vinegar near the end of the cooking time, beans and peas will remain firm rather than soft. Thus, if you desire soft beans, add these ingredients at the end of the cooking time.

FOOD FACTS

X - BREAD AND CAKE PRODUCTS

Dry mixes and flours

Some operators use flour and cornmeal to prepare some of their bread products from scratch, whereas others utilize dry mixes for making soft rolls, biscuits, corn bread, waffles, pancakes, muffins, and sundry other breads. For best results, simply follow the instructions provided by the manufacturers. Serve hot bread immediately after baking or hold in a warmer until needed. CN Programs require the use of enriched flours or whole grains if the bread is going to count toward meeting meal pattern requirements.

Refrigerated and frozen doughs

Refrigerated and frozen doughs can be purchased by operators who wish to serve hot breads without making the dough themselves. Dough purchased in this manner is ready to place into pans and bake. These doughs can be purchased as rolls, biscuits, loaves, cornbread, etc. Refrigerated dough has a shelf life at 36°F of 3 to 5 days. Freezer dough can be held for a month at -10°F.

Crackers

Crackers are available in many different shapes, flavors, and names, such as saltines, oyster crackers, melba toast (rounds), garlic rounds and different flavored bread sticks, and cheese crackers. Croutons used for garnishing salads are also a form of cracker. Although they can be purchased bulk packed in film-lined boxes, most operators prefer the portion packs. Bulk packs usually contain from 250 to 400 single units, but the count is specified on the box.

The quality of crackers is related to its crispness. The moisture content of quality crackers is very low and it is essential that this low moisture be maintained from manufacturer to patron. The popularity of portion packed crackers is attributable to the ability of these products to maintain their crispness. Care must be taken in handling bulk-pack crackers to make sure that the containers are completely resealed immediately after they are opened.

Cookies

Cookies and wafers are available in many different flavors. Some of the favorite flavors are chocolate chip, vanilla (wafers), coconut and oatmeal. Fig bars and cream cookies of various flavors are sometimes offered in restaurants and at snack bars. Cookies for the food service trade are packed in bulk with about 300 to the package or in portion packs with 2 cookies to the pack and 500 packs to the box.

The quality of cookies depends on the ingredients used and how carefully they are packaged and handled. To maintain their crispness and flavor, cookies must be protected from moisture in the atmosphere at all times. This means that cookies must be resealed and kept tightly packaged in protective film at all times.

Toppings

Toppings are used extensively for cake type products. The most commonly used are "whip toppings", fruit mixes, and chocolate syrup and (hot) fudge. A food service operator can prepare whip topping from fresh cream; he can purchase a frozen whip filling base in 2 pound cans; or use aerosol cans of whip topping. This product is packed in 32-ounce cans. Although toppings prepared from fresh cream might have high consumer acceptance, toppings prepared from a whip filling base or dispensed from aerosol cans are satisfactory for use with some products.

Fruit toppings are available in different flavors and mixes and are packed in half-gallon jars. Two popular flavors are maraschino and pineapple. Chocolate syrup and hot fudge toppings are used principally in ice cream and cakes. These products are available in No. 10 cans and one gallon jars, and they are ready to use. Hot fudge should be heated before using.

In this text the term, cereal, is applied only to those products prepared from grains or seeds which are commonly eaten as "cereals" for breakfast. These products are available in two types: cold and hot. Cold cereals are made in accord with various manufacturers formulations and are available in many different types. They are ready to eat after adding milk and perhaps fruit. Hot cereals consist of oatmeal, cream of wheat, (corn meal) mush, and (hominy) grits. The first three are usually eaten with milk or cream and grits are eaten as a side dish with such breakfast main course items as bacon and eggs.

The eating quality of cold cereals is related to the acceptability of the ingredients and the manner in which they are produced and handled. Good quality in most ready-to-eat cereals is identifiable by a toasted appearance, bright lively color, and a crisp texture. They may be stored at room temperature, but the stock must be rotated so as to use the freshest product possible. Most cereals have a nutritional shelf life of one year, but if proper rotation is not followed, the older products can lose some of their crispness.

Ready-to-eat cereals are packaged with airtight seals which do an excellent job of maintaining the freshness. To keep the tastes of cereal at their best, store the packages in a clean, cool, dry, convenient place with other non-refrigerated foods used for the breakfast meal. Never place cereals on a shelf used for soap or other products or foods having a strong odor since the flavor of cereals may be adversely affected.

Although cold cereal can be purchased in bulk, most operators prefer portion sizes so as to better maintain crispness. Bulk packages should be opened and reclosed in accord with the directions shown on the box.

Cereals for serving hot are available as "quick cook" or regular cook. Quick cook cereals are par (partially) boiled and need only a short cook. Prepare hot cereals in accord with the manufacturers instructions. Opened boxes of hot type cereals should be reclosed tightly to prevent infestation and to preserve flavor. CN Programs require that cereals be enriched or whole grain if they are going to count toward Meal Pattern Requirements.

Gelatins can be served plain or with fruit added. They are also used in salads as well as desserts. Food service establishments purchase flavored gelatin granules in packages usually weighing either 24 ounces or 4-1/2 pounds. They are prepared by stirring the granules into pre-measured hot water, cooling, adding fruit, pouring into forms or cups and chilling. Whipped toppings are usually added at time of serving. Listed below are some helpful hints of preparing gelatin.

- Be sure to use hot water-150° or over. (Most tap water is 140° or less)

- Dissolving gelatin - add gelatin to hot water. Stir long enough to put every bit into solution.
- Speed up the setting by the ice and water method. Simply measure 1/3 of the liquid called for to dissolve (or up to 1/2 if preferred). Bring this to 150°F or hotter, add gelatin, and stir until dissolved. Measure the rest of the required liquid as crushed ice; add cold water just to cover the ice in the measuring container. Add to the dissolved gelatin, stirring until the ice melts and the gelatin thickens. Avoid any brisk stirring after thickening begins. This can entrap air bubbles and mar the clear sparkling look.
- To remove any foam, lightly blot with a paper towel while still in liquid form.
- When adding fruit be sure it is thoroughly drained of all juice. Then add fruit when gelatin is beginning to congeal.
- Juice from drained fruit can be used to replace a like amount of water normally used. (Never use any pineapple juice). The acid in pineapple juice keeps gelatin from setting.)
- When molding gelatin to avoid any filming caused by pouring hot gelatin into a cold mold, rinse the mold first in hot water, shake excess water from mold (do not dry with a towel) and pour into mold while mold is damp.
- After gelatin is set be sure to cover the container so that gelatin will not pick up other flavors, odors, or get dirty because of other foods stored in the refrigerator.

Jellies

Jellies, jams and preserves are used interchangeably as spreads for toast, rolls, and other breads. Jelly is made by boiling fruit until tender and then draining off the juice. The juice is mixed with sugar and boiled until it gels or congeals. If the juice and crushed fruit are not separated, the resulting product is jam. Preserves are the same as jam except that this label is reserved for packs which contain large pieces of fruit. Marmalade is a preserve or jam, usually made from oranges and includes the pulp and sliced rinds of the fruit. Imitation flavors and/or colors are sometimes substituted for fruit to reduce costs.

Fruit such as apples and grapes which are high in pectin are used extensively to make jellies, because the pectin gives the juice a quick jell.

Sugar

There are three types of sugar of interest to food service operators: white granulated, white powdered and brown soft. White granulated sugar is the very popular table product called crystal sugar to distinguish it from powdered sugar. The quality of granulated sugar is determined by the degree to which it is refined. The highest quality sugar, when tested with a polariscope is at least 99.7 percent "pure." It can be purchased in regular or super-fine granules or in solid cubes (wrapped or unwrapped).

Granulated sugar is made from either sugar cane or sugar beets and is packed in film lined bags, boxes, or portion packets. Bags come in 5, 10, 25 or 100 pound sizes. Boxes contain one or two pounds. Cubes can be purchased 500 to the box. Although of secondary importance to food service operators, sugar is also available in liquid form. It is purchased in this form in tank cars or trucks.

Powdered sugar is the finest, smoothest and whitest of sugars. It is prepared with the addition of a small amount of corn starch, and is used for candies, uncooked frostings and dessert sauces. The confectioner label is used to denote the powdered sugar with the finest granules. Some manufacturers label confectioner's sugar XXXX and regular powdered sugar XXX, so that the buyer can distinguish between the two.

Brown sugar is a soft product which is the residual from the final centrifuging of cane sugar. Once all of the white sugar has been extracted from the process, the residual is further processed into brown sugar and molasses.

Although most of our sugar comes from sugar cane, a large amount is also produced from sugar beets. Both of these crops yield "sucrose" sugar. There is no significant difference in the sugar produced from sugar cane or beets.

Sugars made from cornstarch are used in candies, canned fruits, breads and other products which require sweeteners less sweet than cane and beet sugars. Flavored, sweetened cornstarch is a primary ingredient in puddings and pie fillings.

Maple sugar, which is refined from maple syrup, has a very distinct flavor and has special uses. Molasses and honey are often used as sugar substitutes in making cookies and candies. Low calorie substitutes for sugar may be purchased instead of sugar. These products have no food value.

Jellies and jams, etc. are packed for the food service trades in No. 10 cans and in 1/2 ounce portion packs. Quality is governed by the quality of the fruit used and the manner in which it is processed. High quality packs have a rich consistency, good color and flavor and are practically free from defects. If the color is improved by adding artificial color, the label should so state. Low quality products are thin and lack flavor. High quality jellies, preserves, and marmalades are rich in fruit or fruit juices.

Syrups

Syrups are used for pancakes, waffles, etc. as well as flavoring for other foods. They are available in different consistencies and flavors.

Pure maple syrup is a very light, clear product made by refining the sap of maple trees. It has a light, pleasing flavor. Maple syrup is often blended with other syrups to produce a heavier, less expensive product. Cane syrup is made from cane sugar and is often blended with maple and corn syrups or flavored with imitation maple. Corn syrup is produced from corn starch and sugar. Molasses is the thick, sweet, dark syrup produced as a residual of the final stage of sugar refining. It has a hearty and robust flavor. Corn syrup and molasses are used in preparing other foods such as cookies and candy. When added to sauces and frostings, corn syrup will prevent crystallization of the other sugars. Grenadine syrup which is produced from pomegranate fruit, is used mainly for flavoring beverages and food dishes.

Syrups are packed for the food service trades in gallon jars, No. 10 cans and 1/2 ounce portion packs. Syrups can be made in the kitchen by boiling a mixture of water, white sugar, brown sugar and vanilla extract and adding imitation maple flavoring.

Honey

Honey is used as a substitute for jellies and syrups, and as a sweetener for dessert and baked goods. Honey is available in several kinds, as influenced by the flowers from which the nectar comes. Colors range from white or nearly clear to dark amber. Usually the lighter the color, the lighter the flavor.

Honeys are labeled according to the predominant flavor from which the nectar came. Common sources are alfalfa, clover, buckwheat and wild flower. California sage and orange blossoms produce a white, high quality honey. Goldenrod and asters produce a dark honey.

Most honey is heated while processing to prevent the sugars from crystallizing. However, if the honey sets for a long time, the liquid may separate to form crystals. This product is preferred by some people and is called "creamed honey." Honey is sometimes added to butter and whipped to form Honey Butter, which has some commercial appeal.

Honey quality is related to the flower source and the thoroughness with which it is processed. Although sometimes sold with traces of combs, most honey is thoroughly clarified before packing. Honey for the food service trades is packed in 3 pound jars and 1/2 ounce portion packets.

Dry Milk

Dry milk is used predominantly for cooking or baking. This product is available as non-fat dry milk or whole milk. Both types are produced by removing the water from whole or skim milk.

Non-fat dry milk may be purchased in accord with U.S. Grades, spray dried or roller dried, or as regular or instant granules. The two established grades are U.S. Extra and U.S. Standard. Grading is based on selected quality characteristics and Extra Grade is the highest quality product. Non-fat dry milk which is not graded may or may not meet the standards outlined for the graded products.

In the production of non-fat dry milk, the fluid skim milk is subjected to specific heat treatments before drying. Not all non-fat dry milk is labeled according to heat treatment. If it is labeled, it is referred to as low, medium, or high heat non-fat dry milk.

When non-fat dry milk is to be reconstituted to a fluid product, a low heat product should be purchased. For baking, the use of a high heat non-fat dry milk will produce the best results in the finished baked products.

Spray dried, non-fat milk may be processed under low, medium or high heat. However, roller dried non-fat milk is always a high heat product. Roller dried products can be used to produce satisfactory baked goods, but lack good solubility properties, and do not reconstitute readily with water.

Instant non-fat dry skim milk has a much larger particle size which gives it excellent solubility and dissolving properties. It is a low heat product as well.

Dry, whole milk is sometimes used in place of fluid whole milk in the preparation of various food dishes. It can be purchased in accord with U.S. grades Premium, Extra and Standard. Dry milk is usually purchased in 5 pound bags, although it is available in 50 or 100 pound sizes.

Canned Milk

Canned milk is available in concentrated (condensed) form. Condensed milk is produced by evaporating some of the water from whole milk, after which it is sweetened. Plain evaporated milk is produced in the same manner but is unsweetened.

The term "cooking oils" has been expanded in recent years to include solid as well as liquid fats. Many of the oils used for cooking are also used in salad dressings. Butter and margarine are also included among the wide range of cooking oils.

Some oils are very suitable for pan or griddle frying while others are used mainly for sauteing or deep fat frying. Oils used specifically for baking are referred to as shortenings.

Some oils are made from animal fats, but most are made from vegetables. Hydrogenated oils are produced from vegetable oils which are chemically combined with hydrogen to harden them. These oils are usually white and have no particular taste. This makes them desirable for cooking.

Whereas lard comes from animal fat, most other oil and shortenings are made from a variety of vegetable seeds. Most of the commercial oils come from soybeans, corn, safflower seeds, cottonseed, olive and peanuts. Olive oil is the only one not commonly used as an all-purpose oil, both because it too expensive for cooking and it splatters when it is hot. However, its delicate flavor is highly regarded for use in salad dressings.

Quality in oils is dictated by the type of oil and its usage. The choice will depend on the flavor desired and the temperature to which it will be heated. Vegetable oils and shortenings work best for hot frying because they can be heated to a high smoke point without changing composition and may be used when a neutral flavor is desired.

Storage and Care

Oils can go rancid if held too long, so rotate stock for consistent turnover and store in a cool dry place where they are not exposed to light. Saturated fat, which is high in its number of hydrogen atoms per fat molecule, does not turn rancid as fast as unsaturated fat, although it is higher in cholesterol.

Oils used for deep fat frying need special care because they are used over and over again. It is important, therefore, to select the proper oil for the products to be fried and use it in strict accord with the recommendations from both the manufacturers of the oil and equipment. Since moisture, breadings, salt and temperature cause breakdown in cooking oils, it is important to filter the fat, regularly and add fresh oil.

There are two types of olives commonly used in food service. One is a ripe or black olive, usually packed with pit-in, which is used for garnishing dishes and for snacks. The other is the Spanish or green olive, which is sold pit-in or pit-out and is often stuffed with pimiento (sweet), red pepper valued for its color and flavor. They are sometimes stuffed with anchovies, onions, almonds or capers. Whereas, the green olives are packed as a true pickle, black olives are packed as a canned ripe fruit.

DEEP FAT FRYING CHART

Food	Cook Frozen	Size or Weight	Coating	Temp.	Time Minutes
Meats:					
Cutlets (Beef, Pork or Veal)	Yes	4 oz.	Dip in seasoned flour, then eggs mixed with milk, then fine bread crumbs.	350°	3 to 4
Meatballs — to sear	Yes	¼ to 2 oz		350°	½ to 1
Chicken:					
Precooked Chicken Halves	No	12 to 13 oz.	Dip in seasoned flour, then eggs mixed with milk, then fine bread crumbs. For croquettes, omit seasoning in flour.	350°	5 to 6
Chicken Cutlet	Yes	4 oz.		360°	3
Precooked Chicken Parts	Yes	Pieces		360°	5 to 8
Croquettes	No	3 oz.		350°	3 to 3½
Seafood:					
Fish Cakes	No	2 oz. (2¼" x ¾")	Flour; beaten eggs with milk; cracker crumbs.	340°	3 to 4
Clams	Yes	Approx. 1½"	Flour; eggs, seasoning, milk; fine bread crumbs.	365°	1 to 3
Fish Fillets	Yes	2 oz. (3¾" x ¼")	Eggs with milk or water and seasoned bread crumbs.	375°	4 to 4½
Whole Fish	No	4 to 5 oz.	Same	360°	6 to 8
Oysters	Yes	1 oz.	Eggs with milk and seasonings; flour; fine bread crumbs.	360°	2 to 2½
Scallops	Yes	1¼"	Seasoned flour; eggs with milk; fine bread crumbs.	360°	3 to 4
Shrimp	Yes	½ oz.	Flour; eggs with seasoning and water; fine bread crumbs.	350°	3 to 3½
Frog Legs	No	Approx. 6" long	Milk, flour.	375°	3 to 4
Turnovers (Meat, Poultry and Fruit)	No	4½"	Pastry	375°	3
Doughnuts	Either	3" Diameter		375°	3 to 4
Fritters	No	2" Diameter	Fritter Batter	350°	2 to 3
Vegetables:					
Cauliflower	No	Approx. 1½"	Cook just until tender. Flour; eggs and milk; bread crumbs.	350°	3 to 3½
Eggplant	No	2½" x ½" Sticks	Flour; eggs and milk; bread crumbs.	370°	3
Zucchini	No	2½" x ½" Sticks	Flour; eggs and milk; bread crumbs.	350°	2 to 3
Onion Rings	No		Slice on #30 (¼"). Flour, pancake batter, bread crumbs.	365°	2 to 3
Potatoes (to blanch)	No	¾" sticks		350°	5
Potatoes	Yes	¾" sticks	Use frozen, blanched potatoes.	350°	2
Browned Potatoes (precooked)	No	1½" Diameter		370°	4 to 6
Potato Chips	No	24 slices per inch		370°	2 to 3

Although all olives are picked green, some of them are allowed to ripen and turn purple-black and others are processed in such a manner as to retain their green color. Outside of the U.S., olives are grown firstly for their oil and secondly for pickling. Most of the green olives consumed in the U.S. come from abroad. Black olives are grown extensively in California and Arizona. All fresh olives have a bitter substance which makes them unpleasant to eat. Therefore, olives are generally not consumed fresh, but require processing to remove the bitterness.

Green Olives

Green olives represent a large portion of the olives used in the U.S. and Spain is the chief supplier. Several varieties of olive trees grow in Spain, but the Queen and the Manzanilla, which have a nut-like flavor, are the only two varieties exported to the U.S. Queens are large, deep green, fleshy, plump olives which are sold plain or with pimiento stuffing. Manzanilla olives are smaller, lighter green in color and finer textured with thin, silky skin. They are sold as cocktail olives and stuffed with pimientos, anchovies, almonds, capers or onion.

Green olives are cured by putting them into concrete vats containing a soda solution which generates heat and then "cooks" the olives. This process removes the characteristic bitter flavor and softens the olives. Once this process is completed the olives are washed, placed in casks with a brine solution and allowed to ferment in the sunshine. This fermentation period takes from 1 to 3 months, depending on the weather. Fermentation softens the flesh and gives the olive its characteristic yellow-green color. After fermentation, the olives are drained, sorted by size, then pitted. Pitting is done by hand. Each olive is placed beneath a metal pin, a lever is pulled and the pit is forced out. Stuffing also is done by hand with pimientos which previously have been processed and cut into strips. Nimble fingered women fold the pimiento strips and put them into the pitted olives.

Once this process is completed, the olives are packed with fresh brine in 160 gallon chestnut casks or 48 gallon barrels and shipped to packing firms in the U.S. Upon arrival, the olives are drained and packed into jars of assorted sizes to which fresh brine solution is added before they are sealed and labeled ready for packing into cartons.

Green olives for the food service trade are packed in gallon, quarts or half-gallon jars. They are available in a range of sizes, designated by the number per gallon. See following illustration. Broken green olives or olive pieces can be purchased, with or without pimientos, as "salad olives." These economical olives can be used in any dishes where a whole olive is not required.

Green olives are also available in two types of pack: a "thrown pack" is one in which the olives are packaged without regard to placement or arrangement within the jar. A "Placed (or stick) pack" is one in which the olives are packed in a definite orderly pattern.

In selecting green olives, it is important to select the variety and size best suited for a particular use. Otherwise the eating quality of green olives depends on the maturity of the olives when picked, the absence of defects and the manner in which they are processed.

Although all green olives should be picked when fully grown but unripe, this is not always the case. Olives which have not yet reached their peak size and development are not of superior quality. Whole olives which are plump and pliable and which have not been torn deserve a high quality rating. Green olives can be purchased in accord with U.S. Grades, A, B, and C.












Black Olives

Black olives are processed in a manner similar to green olives except they are permitted to ripen after picking and take on a purple to black color. They are packed in a light brine, then canned and cooked. Black olives are graded and packed according to size. See following illustration. They are also packed in blended sizes. When several of the very largest sizes are blended, the output is called a Royal Pack. A blend of the second largest sizes is called a King Pack, and a blend of the medium and large sizes is referred to as a Family Pack.








Black olives are also sometimes packed in other blends or mixed sizes. In addition to the whole styles which are available either pitted or unpitted, black olives are also packed halved, chopped or minced, sliced, and broken (from pitting).

Black olives are packed for the food service trade in No. 10 cans and are sold according to count (or size), i.e., the number of olives per No. 10 can. The drained weight of a No. 10 can will vary according to the size of the olives and the style of the pack. The recommended drained weights of whole sizes vary from 64 ounces for the largest to 66 ounces for the smallest. Halved or sliced olives should have a drained weight of 50 ounces; broken olives, 55 ounces; and chopped or minced olives, 100 ounces; per No. 10 can.

Most black olives are oxidized in processing to give the pack a uniform purple-black color. These olives are designated as "Ripe type." Olives of advanced maturity which are not oxidized during processing are referred to as "tree ripened" or "home cured." The color of these olives ranges from tan to light bronze. Other olives which are not oxidized during processing are called "Green ripe type." These olives range in color from greenish-yellow to yellowish-green, and may have a mottled appearance.

ILLUSTRATION OF SIZES AND NUMERICAL DESIGNATION	SIZE DESIGNATION	OTHER SIZE DESIGNATIONS		ILLUSTRATION OF SIZES AND NUMERICAL DESIGNATION	SIZE DESIGNATION	OTHER SIZE DESIGNATIONS	
		COUNTS PER POUND	APPROXIMATE COUNTS PER KILO			COUNTS PER POUND	APPROXIMATE COUNTS PER KILO
Smaller than Sub-Petite		221 or more	more than 420				
 00	Sub-Petite	Approximate 200 (181 to 220)	400/420	 5	Mammoth	Approximate 70 (65 to 75)	150/160 140/150
 0	Petite or Midget	Approximate 160 (141 to 180)	380/400 340/360 300/320	 6	Giant	53 to 64	130/140 120/130
 1	Small or Select or Standard	Approximate 135 (128 to 140)	280/300	 7	Jumbo	42 to 52	110/120 100/110 90/100
 2	Medium	Approximate 113 (106 to 127)	240/260	 8	Colossal	33 to 41	80/90 70/80
 3	Large	Approximate 98 (91 to 105)	200/220	 9	Super Colossal	32 or less	60/70
 4	Extra Large	Approximate 82 (76 to 90)	180/200 160/180				

CALIFORNIA CANNED RIPE OLIVES FOOD SERVICE PACK

	Size Designation	PITTED			WHOLE UNPITTED		
		Drained Net Weight No. 10 Can	Approx. Number Per Can	Average Number Per Lb.	Drained Net Weight No. 10 Can	Approx. Number Per Can	Average Number Per Lb.
	Small	51 oz.	578	177-193	66 oz.	557	128
	Medium	51 oz.	486	150-165	66 oz.	466	106
	Large	51 oz.	430	123-138	66 oz.	404	91
	Extra Large	51 oz.	350	105-120	66 oz.	288	65
	Jumbo	49 oz.	245	69-90	64 oz.	228	51
	Colossal	49 oz.	199	54-70	64 oz.	192	41
	Super Colossal	49 oz.	163	44-56	64 oz.	128	26
STYLE		DRAINED WEIGHT #10 CAN		CUPS PER CAN	WEIGHT PER CUP		CALORIE PER CUP
	Sliced	55 oz.		13	135 gm		174
	Wedged	55 oz.		11-1/4	150 gm		193
	Chopped	90 oz.		14-1/2	195 gm		251

FOOD FACTS

X - OLIVES

High quality black olives are firm and tender, have a pleasing texture, a good color and are practically free from wrinkles. Olives are downgraded if they are soft, coarse or mutilated. Olives which are picked before they reach their full growth, or which are not thoroughly processed yield packs of inferior quality. Black olives can be purchased in accord with U.S. Grades A, B, and C.

Olives packed in jars and cans can be stored for up to 2 years at room temperature (70°F) without any noticeable change in quality. However, once the container is opened, it should be placed under refrigeration. Furthermore, olives which are served chilled are generally more crisp and pleasing than those served at room temperature.

FOOD FACTS

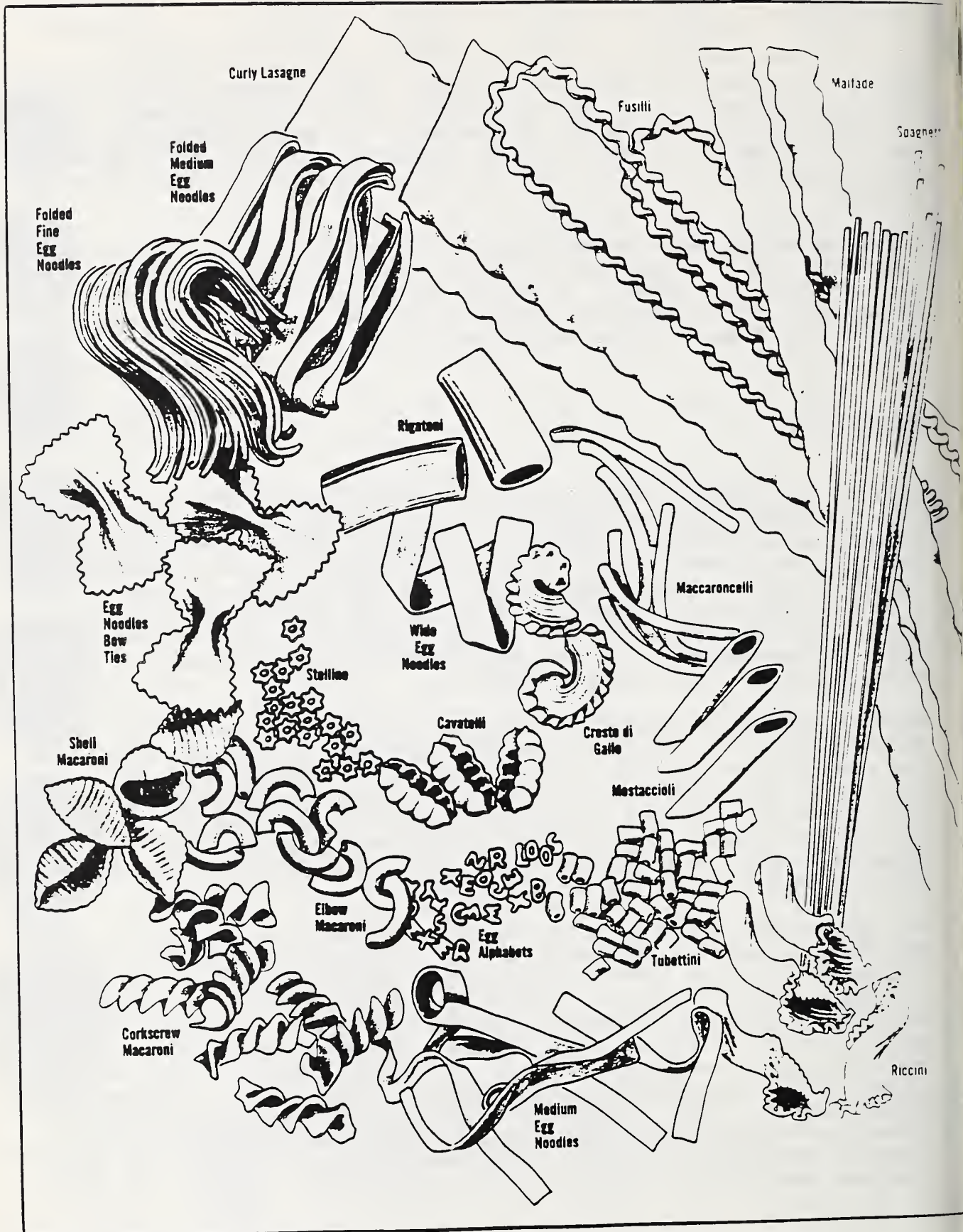
X - PASTA

Pasta is the generic term for more than 300 different shapes of macaroni products, broadly grouped into three main categories: (1) spaghetti, (2) macaroni and (3) noodles. Spaghettoni is thinner than regular spaghetti and vermicelli is thinnest of all. Short curved spaghetti is also available and there are small and jumbo sized macaroni wheels and noodle bows. Noodles come in widths from fine to broad, including the very broad lasagna or pot pie type. There are dozens of other unusual forms, many with exotic Italian names, such as manicotti, rigatoni, green noodles (contain spinach) and cresta di gallo (shaped like a rooster's crest).

Pasta is made from durum wheat, a hard wheat with a high gluten content and a yellowish color. In milling durum wheat, the bran and germ are removed and the starchy inner portion is ground coarsely to produce semolina. The semolina is then mixed to a stiff dough with water and forced through a die that shapes it. To make it more nutritious, the ground wheat flour, or semolina is enriched. Pasta products combine well with meat, fish, poultry, cheese and eggs and can be the basis for a main dish or a side dish or incorporated into salads and hors d'oeuvres.

The basic method for cooking pasta products calls for a large pot, rapidly boiling water and short cooking times, usually from 8 to 10 minutes. Add a tablespoon of oil per quart of water to keep the pasta separated and to keep it from sticking to the pot. Gradually add the pasta so that the water continues to boil. Cook uncovered, stirring occasionally to prevent sticking, until the pasta is tender, or fairly firm, according to preference. Avoid overcooking since over-cooked pasta is too soft and shapeless. When pasta is tender, drain it immediately using a colander or large sieve. If the pasta is to be served hot, serve immediately. If it is to be used for salads, cool it by rinsing with cold water. Pasta that is cooked some time before serving hot tends to over-cook and dry out. If leftover pasta is to be used, it can be freshened when ready by rinsing with hot or cold water.

EXAMPLES OF PASTA



National Pasta Association, 1901 N. Fort Myer Drive. Arlington, VA 22209

FOOD FACTS

X - PASTA

Generally speaking, noodles will yield about the same amount cooked as uncooked, but elbow macaroni and spaghetti will double in volume when cooked, so make the necessary allowances.

Pasta products ready for cooking are available in packaged forms. Prepared pasta entree items such as spaghetti and meat sauce or macaroni and beef are available canned or frozen.

FOOD FACTS

X - PEANUT BUTTER

Peanut butter is a cohesive, comminuted food product prepared from clean, sound, shelled peanuts by grinding or milling properly roasted, mature peanut kernels from which the seed coats have been removed and to which salt is added as a seasoning agent. Suitable seasoning agents other than salt, suitable stabilizing ingredient(s), and ingredient(s) of nutritive value as permitted under the provisions of the Federal Food and Drug Administration.

Textures

Peanut Butter is produced in three general textures as follows:

- "Smooth" texture means the peanut butter has a very fine, very even texture with no perceptible grainy peanut particles.
- "Medium" texture means the peanut butter has a definite grainy texture with perceptible peanut particles approximating not more than 1/16 inch in any dimension.
- "Chunky" or "Crunchy" texture means peanut butter which has a partially fine or partially grainy texture with substantial amounts of peanut particles larger than 1/16 inch in any dimension.

Types

Peanut Butter is produced in two generalized types as follows:

- o Stabilized Type: Stabilized peanut butter is any peanut butter prepared (1) by any special process, and/or (2) with any suitable added ingredient(s) designed or intended to stabilize the product.
- o Non-stabilized type: Non-stabilized peanut butter is any peanut butter prepared without special process or added ingredient(s) to stabilize the product.

Grades

Peanut butter may carry one of two grade designations, as follows:

- "U.S. Grade A" (or "U.S. Fancy") is the quality of peanut butter that has a good color, that has a good consistency, that is practically free from defects, that has a good flavor and good aroma, that has uniform dispersion of added ingredient(s), and that scores not less than 90 points when scored in accordance with the scoring system outlined in this subpart.
- "U.S. Grade C" (or "U.S. Standard") is the quality of peanut butter that has a fairly good color, that has a fairly good consistency, that is fairly free from defects, that has a fairly good flavor and a fairly good aroma, that has reasonably uniform dispersion of added ingredient(s), and that scores not less than 80 points when scored in accordance with the scoring system outlined in this subpart.

Factors of Quality

The grade of peanut butter may be ascertained by considering, in addition to the requirements of the respective grade, the following factors: Color, consistency, absence of defects, and flavor and aroma. The relative importance of each factor which is scored is expressed numerically on the scale of 100. The maximum number of points that may be given such factors are:

Factors:	Points
(1) Color.....	20
(2) Consistency.....	20
(3) Absence of defects.....	30
(4) Flavor and aroma.....	
Total Score.....	100

Pack, Storage and Care

Peanut butter for the Food Service Trades are packed in No. 10 cans or in 20-25 pound polylined cans buckets. The product is very stable at room temperature and has a long storage life. Peanut butter can be stored in closed containers at room temperature after opening, however, if a container is not used within a few weeks, a film of peanut oil may rise to the top necessitating stirring of the product to reincorporate the oil.

When the term, "pickle" is used in North America, it is understood to mean cucumber pickles. Other types of pickles are identified by the name of the vegetable or fruit. Some of the more important of these other pickles are made from cauliflower, onions, tomatoes, beets, peppers, cabbage, crab apples, peaches, pears and watermelon rind. Pickles of all types are used as a complement to other foods or they may be used as snacks or as ingredients in other dishes. The basic pickling process involves preservation in vinegar, salt and spice and sometimes sugar.

Cucumber pickles are available in over 36 types belonging to one of four groups. These are dill, sour, sweet and fresh packed pickles. Within these groups are many different varieties which are packed whole, cut cross-wise, sliced lengthwise, or finely chopped and sold as relish.

Dill Pickles can be either fermented or processed. Fermented dill pickles are preserved and finished by slow natural fermentation. There are three types:

- Genuine dills, which are made from cucumbers placed in a special salt solution, flavored with dill (an herb), vinegar and mixed spices.
- Genuine Kosher Dills, which are made the same as Genuine Dills except fresh garlic cloves are added to the pickling solution.
- Overnight Dills, which are made the same as Genuine Dills except fermentation is not allowed to continue after 2 - 3 days.

Processed dill pickles are shipped to packing plants in brine solution, then transferred to dill solution for a week, packed and distributed.

Sour Pickles are prepared in regular brine solution. When removed from the brine solution they are desalted and freshened. This is done by adding fresh water and applying steam to raise the temperature rapidly. The mixture is then cooled and the process repeated. The freshened pickles are then made into sour pickles by adding spices and sour vinegar.

There are four types of sour pickles:

- Whole Sour Pickles, which are made from whole freshened cucumbers packed in spiced sour vinegar.
- Sour Mixed Pickles, which are made from freshened cucumbers cut into chunks and combined with other sour-cured vegetables.
- Sour Relish, which is made from finely chopped freshened cucumbers packed alone or with other finely chopped sour-cured vegetables.
- Chow-Chow, which is sour mixed pickles plus a mustard sauce flavored with spices.

Sweet Pickles are prepared like sour pickles except the freshened pickles are sweetened with a mixture of vinegar, sugar and spices. There are five types of these pickles:

- Whole Sweet Pickles, which are whole freshened cucumbers finished in sweet spicy liquors until the desired degree of sweetness is attained. Sweet pickles made from small, usually prickly cucumbers are called gherkins.
- Sweet Mixed Pickles, which are made up of chunks of cucumbers mixed with other vegetables.
- Candied Dills, which are sticks, strips, or chips of genuine or processed dills packed in a sweetened liquor.
- Sliced Sweet Pickles (cross cuts), which are made from freshened cucumbers, cut crosswise and packed in a sweetened spicy liquor.
- Sweet Pickle Relish, which consists of finely chopped sweet pickles sometimes combined with other finely chopped sweet pickled vegetables.

Fresh Pack Pickles are made from fresh green cucumbers packed in hermetically sealed containers by means of pasteurization instead of being cured. There are three types of these pickles:

- Sweet Fresh Cucumber Pickles, made from fresh green cucumbers, cut crosswise and packed in mildly spiced, sweetened liquor.
- Pasteurized or Polish-style Dills, which are made from whole or lengthwise sliced cucumbers. They are packed in a mild dill solution, similar to overnight dills.
- Vegetable Relish which is made from a combination of fresh green cucumbers and other vegetables. Pickling spices are used in the sweetened liquor.

Food service establishments can purchase pickles in gallon jars, No. 10 cans, 5 gallon film lined drums, 5 gallon plastic pails, 15 gallon film lined corrugated fiber drums, and 45 gallon barrels. Whole pickle sizes are designated by the length and count per gallon as follows:

Size Term	Size Number	Appropriate Count Per Gallon	Length in Inches
Midgets	1 Midget	445/545	1-1/2 or less
Midgets	2 Midget	330/444	1-1/2 or 2
Gherkins	1 Gherkin	225/329	2 to 2-1/4
Gherkins	2 Gherkin	135/224	2 to 2-1/2
Gherkins	3 Gherkin	100/134	2-1/2 to 2-3/4
Small	1 Small	80/99	2-3/4 to 3
Small	2 Small	66/79	3 to 3-1/4
Small	3 Small	52/65	3-1/4 to 3-1/2
Medium		40/51	3-1/2 to 4
Large	1 Large	26/39	4 to 4-1/4
Large	2 Large	22/25	4-1/4 to 4-3/4
Extra Large		16/21	4-3/4 to 5-1/4

FOOD FACTS

X - PICKLES

NOTE: A special type of gherkin, called the Burr Gherkin, is a West Indian fruit, not a true cucumber. It is used for small, sweet cucumber pickles. It is pale green and covered with prickly spines. Some of the smallest midgets and gherkins are made from this product.

At least 55 percent (by volume) of each jar should consist of pickles and about 45 should be liquid. However, the drained weight of relish can vary from 80 to 92 percent (by weight/volume) of pickle ingredients.

High quality pickles have a firm, crisp texture and are practically free from pickles with hollow centers, skin blemishes and grit in either the pickles or the liquid. Whole pickles should be uniform in size and free from excessively crooked or misshapen pieces. Cut or sliced pickles of high quality are practically free of seeds, end pieces and stems. Any pickle which shows a noticeable trace of grit must be drastically downgraded.

Storage and care

Processed pickles can be kept unopened for periods up to 2 years. After opening, they may be stored in the refrigerator for many weeks. Natural acids in the food and the surrounding liquor tend to inhibit the growth of molds and bacteria. Fresh packed cucumber pickles have a much shorter shelf and refrigerator storage life. Overnight pickles must be kept under refrigeration at all times.

FOOD FACTS

X - POTATOES-INSTANT AND CHIPS

Dehydrated (Instant) Potatoes

This class of potato products includes dry packed, sliced potatoes or potato granules. They are used mostly for preparing mashed potatoes, although some forms are used for hash browns and potato salad after reconstituting.

Mashed potatoes are prepared from instant potatoes simply by adding milk or water and heating. Some instant potatoes are packed with powdered milk added. The quality of the end product is determined by the quality of the pack purchased, the ingredients used for reconstituting, and the manner in which the product is heated, whipped (stirred) and served.

Potato Chips

To produce a high quality potato chip, the processor must start with potatoes which have been carefully selected and stored. He must then carefully peel, slice and work with a high degree of control. Potato chips cannot be too greasy or they will not be crisp. Nor can they be too brown or the flavor will be lost.

FOOD FACTS

X - POTATOES-INSTANT AND CHIPS

Careful handling is important of breakage of chips will be excessive and edibility diminished. Although a restaurant's inventory of potato chips should be turned as rapidly as possible, chips will store for 2 to 3 weeks in a dry area. However, once a bag of chips has been opened, the crispness can deteriorate in a matter of 3 to 4 hours, if not repacked in an air tight container.

FOOD FACTS

X - PUDDINGS

Puddings are available in several flavors and styles. Most puddings are soft and smooth, others are coarse. The favorite flavors of smooth pudding are butterscotch (made with brown sugar and butter), chocolate, lemon and vanilla. A popular coarse pudding is made from tapioca (a starch product taken from the roots of the manioc plant). Another popular pudding is made from rice. Although plum puddings are popular in some countries, they are seldom served in the U.S.

Pudding mixes can be purchased in granule form, ready for blending with milk, cooking and cooling. Pudding mixes are available in 24-ounce packages or 5 pound boxes. Instant puddings are available in 2 pound packages. To prepare these products for serving, simple blend with cold milk and chill. Ready to serve puddings can be purchased in No. 10 cans. To serve, simply spoon out and chill. Puddings are also available in portion size cans with zip top lids and are sometimes served at snack bars. They are packed 4 to 5 ounces to the container and are available either canned or frozen.

All puddings should be served well-chilled. Dairy type toppings are often added to smoother puddings. The juice from maraschino cherries is sometimes used for tapioca pudding; and nutmeg is used for topping rice pudding.

The serving quality of puddings depend on the richness of the ingredients, the manner in which the product is prepared and the promptness with which it is served. Stir pudding constantly when heating to prevent scorching. Puddings which are held too long before serving often dry out on top and lose some of their smoothness and flavor.

FOOD FACTS

X - RICE

Rice is a universal food. Although the white varieties are by far the most common, brown and "wild" varieties can also be purchased.

White Rice

White rice comes in long, medium and short grains. When cooked, long grain rice is fluffy, dry and firm but tender, with each grain separate. Short grain or medium grain rice is moist when cooked and the grains tend to cling

together. On the whole, long grain is a bit more expensive than short grain. The quality of rice is downgraded by broken pieces. The lower the percentage of broken pieces, the higher the grade.

White rice can be purchased parboiled (partially boiled). Parboiled rice has undergone special steam pressure before milling that forces the vitamins and minerals from the hull, bran and germ into the starchy portion. This rice, which is usually enriched to give it more nutrition, takes slightly longer to cook than regular rice. However, because it is the long grain variety, the cooked grains are fluffy, separate and plump.

Precooked rice, known as instant rice, is also the enriched long grained variety and will yield 1 to 2 cups of cooked rice for 1 cup of uncooked rice.

Brown Rice

Brown rice has a nutlike flavor, a slightly chewy consistency and needs a bit longer cooking time than white rice. It's a whole grain rice from which only a small amount of bran has been removed. The oil in the bran reduces its shelf life (rancidity may occur). Because it is handled in much smaller volume, it is usually more costly, but brown rice gives variety to menus and if it continues to grow in popularity, this item could become even less expensive than white rice.

Wild Rice

Wild rice is not a true rice. It is the seed of a grass that grows wild in shallow lakes and marshes. It is much more expensive than any of the regular types of rice because it must be harvested by hand from boats. But it is considered a gourmet dish by many and can add an elegant flair to any meal. To cut down on the rather strong flavor and high cost, wild rice can be mixed with brown or white rice.

Seasoned Rices

Consider too, the many seasoned rices that are available today - beef, chicken, chili, cheese, curry and herb. Also available now are frozen rice pilaf and canned spanish rice, as well as many other rice specialties.

Storage and care

It is not necessary to wash rice before cooking. Rice is clean as it comes from the package and washing just wastes valuable minerals and vitamins. The same goes for rinsing after cooking. Be careful to follow package directions and add exactly the amount of water the rice will absorb during cooking. Too much water makes the rice sticky and gummy.

Rice cooked on top of a range or in a steam jacketed kettle should never be held there for more than ten minutes because it will tend to pack. Instead turn the rice out into shallow pans, fluff, and keep warm. The addition of a half cup of melted butter, margarine or oil for each gallon of rice will help keep the grains separate. Cooked rice can be held in this manner at 140 to 160 degrees F. for up to six hours.

Leftover cooked rice can be added to many dishes that call for a starchy food, for example, soups, stews and casseroles. Also, many fruit and gelatin desserts call for cooked rice.

FOOD FACTS

X - SALAD DRESSINGS

The world of salad dressings is confusing, to say the least. Generally, however, these products may be placed into two classes: Mayonnaise (and substitutes) and dressings used for vegetable salads. Vegetable oils are the main ingredients in salad dressings, and the principal oils are derived from olives, peanuts, corn, soybeans and cottonseeds.

Mayonnaise

Mayonnaise and its substitutes are used in the food service industry in many different ways; principally, however, they are used as spreads for sandwiches, as major ingredients in meat and pasta and potato salads, as toppings for fruit salads and vegetable salads and in making salad dressings. According to government standards, to be labeled "Mayonnaise" a product must contain eggs and a minimum of 65 percent oil by weight.

If the product does not meet the minimum standards for mayonnaise, then it is labeled "Salad Dressing." This product is made from cooked starch which is substituted for eggs. It must contain a minimum of 30 percent oil. Products which contain less than the required concentration of oils for mayonnaise can also be labeled "Imitation Mayonnaise." Whereas, many food service operators use substitutes for spreading on sandwiches, others prefer real mayonnaise for making salads of meat, potatoes and pastas or for preparing salad dressings for vegetable salads.

Mayonnaise products are usually purchased in one gallon jars. When unopened, they have a shelf life of about 4 months when stored at room temperature. (70°F). To store longer than six months, place under refrigeration. When opened, the jars must be placed under refrigeration at 35°F. Mayonnaise products can be held for only a few weeks after the jars are opened.

Dressings for Salads

Dressings for vegetable salads are available in many different styles and flavors. Generally, however, they are either mayonnaise based or are made predominantly with oil and vinegar.

FOOD FACTS

X - SALAD DRESSINGS

French dressing is a standardized product which is regulated by the Federal Government. It must contain a minimum of 35 percent vegetable oil, but other ingredients may vary according to the manufacturer's recipe. Other usual ingredients are vinegar, lemon juice, salt, pepper and mustard flavoring. Sugar may be added for a sweet flavoring. Other dressing such as Italian, Thousand Island, Blue Cheese and Russian are not regulated by the Federal Government and recipes vary according to the manufacturer and the price. The predominate ingredients in Italian dressings are: oil and vinegar. Oils may be blends of olive, safflower and others.

Most Thousand Island dressings include mayonnaise, chili sauce, chives, catsup, vinegar, pepper and paprika.

Blue Cheese dressing is a mayonnaise base dressing with spices and blue cheese added. Roquefort cheese dressing is the same as blue except that it is more expensive.

Russian dressing also has a mayonnaise base, usually with lemon juice, chili sauce, or other sauces and chopped pimiento added.

Cole slaw dressings are also made with mayonnaise as well as other flavorings and spices.

Storage and Care

Salad dressings are available in one gallon jars and have a shelf life at room temperature (70°F) of about 2 to 4 months, depending on the ingredients and temperature. For longer storage, hold under refrigeration. At 32°F, the expected shelf life of opened salad dressings is from 2 to 3 weeks.

FOOD FACTS

X - SAUCES AND MIXES

Sauces and mixes are represented by such all-time favorites as barbecue sauce, chili sauce, mustard, worcestershire sauce, tabasco, horseradish, soy sauce, tartar sauce and seafood cocktail sauce and others. Some of these products are made with a ketchup base and others with a vinegar base.

Barbecue sauces are made differently by different manufacturers. However, these products contain tomato puree as the primary ingredient with vinegar, sugar, salt, vegetable stabilizers, hichory smoked flavors, spices and other ingredients. The quality of a barbecue sauce is evaluated in a manner similar to ketchup^{1/}. These sauces are packed for the food service trades in No. 10 cans, table-ready bottles and in portion packets.

^{1/} See Section on Canned Vegetables for a discussion on tomato products, including ketchup.

Chili sauce is made of powdered red and green peppers, onions, salt, tomatoes, sugar, vinegar, spices and other ingredients. It is often used on steaks and chops. This product is sold mostly in table-ready bottles.

Mustard (paste) is prepared from ground mustard seeds which are blended with vinegar, salt, tumeric and other ingredients. It is available in various styles varying from mild to very spicy. Horseradish is sometimes added to mustard to make it more spicy. Mustard is sold in gallon jars, table-ready jars and portion packets.

Worcestershire and other steak sauces are made from blends of vinegar, sugar, caramel color, hydrologized plant proteins, dextrose, spices, and/or spice extracts. Soy sauce is so-called because it is normally made from soy beans. It may also contain hydrolized proteins derived from corn or other grains, salt, sugar, corn syrup solids, vinegar and usually a preservative.

Tabasco is a trade name of a hot seasoning made from vinegar, crushed red peppers and salt. These sauces are usually packed in table-ready bottles.

Horseradish is a relish made from the white hot-tasting roots of a tall plant of the mustard family. It is used principally with roast beef. Tartar sauce is a relish made from mayonnaise, cooked yolk of eggs, olive oil, green onions, chives and sour pickles. It is served with seafood. Seafood "cocktail" sauce is made from a blend of tomato paste and creamed horseradish. These sauces are packed for the restaurant trade mostly in gallon and half-gallon jars, although they may also be purchased in table-ready jars and in portion packets.

Food service operators have access to a variety of other sauces or components which are marketed as liquids, pastes or dry mixes. Some of these are used for making soups or gravies. Others are specialized blends such as cheese suace, pizza sauce, spaghetti sauce, tomato paste with different degrees of solids, and different cooking sauces such as "Kitchen Bouquet" (a brand name). Prepared salad dressings such as blue cheese are sometimes used to season meats. Wines, rum and rum flavor are likewise used widely to add flavor and zest to foods.

Meat tenderizers are used to condition and season some meats before cooking. Tenderizers are usually made from papain, which is the dried juice of the papaya (a melon-like fruit). This substance which is harmless to the human digestive system, tenderizes meat by the action of the enzymes it contains. Meat tenderizers also usually contain vegetable oils, which are used as vehicles for the papain, as well as salt and sugar. Tricalcium phosphate is sometimes used in dry tenderizers.

Bacon bits and croutons are seasonings often used to garnish vegetable salads. Bacon bits are sometimes produced from flavored textured protein substitutes. Croutons are made from dried bread. The crouton cubes can be flavored with essences of oils and garlic.

Vinegar is a popular seasoning which is made from the fermentation of apple cider. It is sometimes clarified into white vinegar, which also can be used as a cleansing agent. It can also be produced as a wine red vinegar. Food service operators generally purchase vinegar in gallon or quart jars.

Seasonings

The acceptance level of food may be greatly influenced by the seasonings added to food during preparation. It is not enough to select raw foods and cook them in a careful manner. If not properly seasoned, foods will often taste bland. The broad family of seasonings include salts, spices, herbs, and blended sauces such as ketchup, vinegar and others.

Salt is universal. Although it can be purchased in different degrees of refinement, food service operators are interested only in table salt, which is a well refined product. Table salt is available in two styles: regular and iodized, which means that a small amount of iodine has been added for dietary purposes. Iodized salt should be used in areas where seafood is consumed in relatively low volumes. Salt for use in restaurants can be purchased in 26-ounce boxes with pour spouts, portion packets or in 25 pound film lined bags.

Spices and herbs have interchangeable meanings to most food service operators. Sometimes they are referred to as "condiments." However, spices usually are derived from the "fruit" and seeds of plants, and herbs are from leaves and stems. About 30 of these condiments are fairly well known. Another 15 are lesser known.

By far the most universal spice is black pepper. The ground product is made from dried unripe pepper corns which grow on an East Indian plant. Peppercorns can also be purchased whole (unground). White peppercorns evolve from ripened peppercorns with the hulls removed.

Some of the other better known peppery spices are cayenne, chili and paprika. These are derived from the dried berries of various pepper plants. Allspice can also be included in this group, although it has a flavor resembling a blend of clover, cinnamon and nutmeg. Curry (powder), which is also a very peppery condiment, is a mixture of spices, seeds, turmeric, etc. Turmeric on the other hand, is a yellow powder prepared from the root of an East Indian plant. Somewhat milder spices are derived from the seeds of the caraway, dill, mustard and sesame plants.

Celery, garlic and onion "spices" are produced from the dried bulbs or stalks of fresh vegetables. Many spices are made from the dried, ground leaves of herbaceous plants. The most popular of these are bay leaves, parsley and chervil, which are derived from plants of the parsley family; oregano and marjoram, which comes from similar plants; rosemary, which is also used for making perfume; sage, a spice well known in the meat packing industry; tarragon, a spice used to flavor vinegar; and thyme, another well known herbaceous plant. Anise is a versatile condiment. The dried light green leaves of this plant produce one type of flavor while the greenish-grey seeds produce another.

Another group of spices are used predominantly for flavoring sweet foods or glazes. Cinnamon is derived from the bark of the cinnamon tree and is available ground or in sticks. Cloves come from the flower or bulb of an evergreen tropical tree. It is available either in ground form or as whole particles. Ginger is derived from the root of a tropical herb. It is used fresh, dried in powders or crystals, or preserved in syrup. Nutmeg is the grated seed of an evergreen East Indian tree. The seed is about as big as a marble when harvested. Mace is the outer shell of the nutmeg seed. Mint is derived from any of a group of sweet smelling herbaceous plants.

The chart shown on the following pages lists some of the uses of the more popular spices.

Extracts

An extract is a substance obtained from the juices of various plants, herbs, flowers, and meats. Some of the most common extracts are vanilla, almond, wintergreen, peppermint, and clove. Because of the extraction of vanilla is an intricate and expensive process, substitutes have been developed for this flavoring. Wintergreen flavoring is derived from the oil of an evergreen shrub. Peppermint flavor is derived from the oil of a cultured mint plant.

Beef and poultry extracts are used to improve the flavor and color of soups, stews, and sauces. They are also condensed and compressed into bouillon cubes.

Soups come in a very wide range of flavors, substances and consistencies. Although most are used as appetizers, some are hearty enough to be a light meal. Soups can be made in-house by means of the proverbial stock-pot; they can be prepared from canned soup bases, or they can be purchased in cans, either single strength or condensed.

PROXIMATE COMPOSITION OF GROUND SPICES, PER TEASPOON

Spice	Wt./tsp.	Water	Food Energy	Protein	Fat	Total Carbohydrate	Fiber Carbohydrate	Ash	Calcium	Phosphorus	Sodium	Potassium	Iron	Thiamine	Riboflavin	Niacin	Ascorbic Acid	Vitamin A Activity
	Grams	Mg.	Cal.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Int'l Units
Allspice	1.7	150	6	102	112	1265	367	71	13.6	1.9	1.4	18.7	127	1.7	1.0	49	666	9
Basil Leaves	1.1	70	3	131	40	679	225	184	23.1	5.2	0.4	40.7	471	1.6	3.5	76	674	165
Bay Leaves	1.3	60	5	99	114	980	328	48	13.0	1.4	0.3	7.8	693	1.3	5.5	26	606	80
Caraway Seed	1.8	110	8	385	416	783	187	101	12.6	9.0	0.4	34.0	153	6.8	6.8	146	N	6
Cardamom Seed	1.8	150	6	176	52	1336	178	85	5.4	3.8	0.2	21.6	209	3.2	4.1	41	N	N
Celery Seed	2.4	120	11	434	547	1051	310	245	43.2	13.2	4.1	33.6	1078	9.8	11.8	106	413	1
Cinnamon	1.7	170	6	78	37	1357	345	59	27.2	0.8	0.2	6.8	70	2.4	3.6	32	677	4
Cloves	1.7	90	7	107	247	1170	189	85	1.9	1.9	4.2	20.4	161	1.9	N	5	1375	9
Coriander Seed	1.1	90	6	172	274	791	441	74	11.2	6.2	0.3	16.8	83	3.6	3.2	45	N	N
Cumin Seed	1.6	100	7	283	381	714	146	123	14.4	7.2	2.6	33.6	765	11.7	6.1	40	275	20
Dill Seed	2.1	110	9	275	376	1184	435	126	33.6	4.4	0.2	23.1	248	8.8	5.9	59	N	1
Fennel Seed	2.1	130	8	199	210	1277	388	281	27.3	10.1	1.9	35.7	233	8.6	7.6	126	N	3
Garlic Powder	1.5	80	5	262	9	1099	28	48	1.5	6.3	0.1	16.5	52	10.2	1.2	10	N	N
Ginger	1.6	110	6	138	102	1158	94	91	1.6	2.4	0.5	22.4	181	0.8	2.1	30	N	2
Mace	1.8	80	10	146	698	830	86	41	3.6	2.0	1.3	9.0	203	6.7	10.1	22	N	14
Marjoram	1.2	80	4	150	82	773	200	116	30.0	2.8	1.3	16.8	872	3.5	3.8	49	618	97
Mustard Powder	1.5	50	9	475	639	277	28	60	4.5	11.8	0.1	10.5	124	9.7	6.7	127	331	1
Nutmeg	1.9	80	11	141	739	899	59	38	3.8	3.8	0.2	7.6	42	6.8	4.7	179	N	2
Onion Powder	2.1	100	8	223	17	1690	131	73	6.3	6.1	0.8	21.0	46	8.8	1.3	12	309	N
Oregano	1.6	130	6	187	102	1038	176	144	27.2	3.2	0.3	27.2	853	5.4	N	99	N	110
Paprika	1.9	150	7	262	198	1146	365	144	3.8	5.7	0.4	45.6	439	11.4	25.8	291	1117	1100
Parsley Flakes	1.1	40	4	241	62	597	96	155	13.2	3.4	5.9	39.6	159	1.9	13.5	87	4312	256
Pepper, Black	2.3	190	9	239	235	1529	230	106	9.2	3.7	0.2	27.6	391	1.6	4.8	18	N	4
Pepper, Chili	2.1	140	9	294	296	1222	328	151	2.1	6.7	0.2	44.1	208	12.4	34.9	298	1338	1090
Pepper, Red	2.1	130	9	336	325	1140	546	168	2.1	6.7	0.2	44.1	208	10.9	19.5	286	617	659
Pepper, White	2.2	210	9	273	176	1518	99	22	4.1	3.3	0.2	2.2	152	0.4	2.9	4	N	N
Poppy Seed	2.5	90	13	577	887	755	217	187	10.0	22.0	0.2	20.0	247	17.2	4.5	22	N	N
Rosemary Leaves	1.2	70	5	54	209	777	228	72	18.0	0.8	0.5	12.0	396	6.1	N	12	736	37
Sage	1.0	50	1	92	127	561	144	69	16.2	0.8	0.1	9.0	246	6.7	3.1	51	358	53
Savory	1.1	130	5	99	73	979	211	122	30.8	2.0	0.3	15.4	529	5.2	N	57	N	71
Sesame Seed	1.9	60	9	450	426	895	716	68	1.9	15.0	0.6	7.6	118	15.2	2.5	108	N	1
Tarragon	1.1	60	5	339	102	721	95	172	18.2	4.3	1.0	44.8	500	3.5	18.8	125	N	59
Thyme	1.5	110	5	102	69	1024	364	198	31.0	3.0	1.2	14.1	2025	7.6	6.0	74	N	57
Turmeric	1.9	110	7	163	169	1328	131	129	3.8	4.9	0.2	47.5	902	1.7	3.6	91	946	N

Spice Chart

HOW MUCH SPICE TO USE: When trying a new idea, it is safest to start with ¼ teaspoon of spice (excepting the red pepper spices) to a pint of sauce, soup or vegetable or a pound of meat, fish or fowl.

ABOUT PEPPER: Our most important

spice deserves special attention. So versatile is its flavor, it could play a well-came role in any dish on this chart (except desserts). Good cooks always remember pepper as a seasoning corrector, often adding a final dash to taste regardless of the other seasonings used.

SPICE	APPETIZER	SOUP	MEAT and EGGS	FISH & POULTRY	SAUCES	VEGETABLES	SALAD & DRESSING	DESSERTS
ALLSPICE	Cocktail Meatballs	Pot Au Feu	Hamsteak	Oyster Stew	Barbecue	Eggplant Creole	Cottage Cheese Dressing	Apple Tapioca Pudding
BASIL	Cheese Stuffed Celery	Manhattan Clem Chowder	Ragout of Beef	Shrimp Creole	Spaghetti	Stewed Tomatoes	Russian Dressing	
BAY LEAF	Pickled Beets	Vegetable Soup	Lamb Stew	Simmered Chicken	Bordelaise	Boiled New Potatoes	Tomato Juice Dressing	
CARAWAY Seed	Mild Cheese Spreads		Sauerkraut		Beef a la Mode Sauce	Cabbage Wedges		
CINNAMON	Cranberry Juice	Fruit Soup	Pork Chops	Sweet and Sour Fish	Butter Sauce for Squash	Sweet Potato Croquettes	Stewed Fruit Salad	Chocolate Pudding
CAYENNE	Deviled Eggs	Oyster Stew	Barbecued Beef	Poached Salmon Hollandaise	Beerhouse	Cooked Greens	Tuna Fish Salad	
CELERY Salt and Seed	Ham Spread (Salt)	Cream of Celery (Seed)	Meat Loaf (Seed)	Chicken Croquettes (Salt)	Celery Sauce (Seed)	Cauliflower (Salt)	Cole Slaw (Seed)	
CHERVIL	Fish Dips	Cream Soup	Omelet	Chicken Sauté	Vegetable Sauce	Peas Francaise	Caesar Salad	
CHILI Powder	Seafood Cocktail Sauce	Pepper Pot	Chili con Carne	Arroz con Pollo	Meat Gravy	Corn Mexicali	Chili French Dressing	
CLOVES	Fruit Punch	Mulligatawny	Boiled Tongue	Baked Fish	Sauce Madeira	Candied Sweet Potatoes		Stewed Pears
CURRY Powder	Curried Shrimp	Cream of Mushroom	Curry of Lamb	Chicken Hash	Oriental or Indian	Creamed Vegetables	Curried Mayonnaise	
DILL Seed	Cottage Cheese	Split Pea	Grilled Lamb Steak	Drawn Butter for Shellfish	Dill Sauce for Fish or Chicken	Peas and Carrots	Sour Cream Dressing	
GARLIC Salt or Powder	Clam Dip	Vegetable Soup	Roast Lamb	Bolliabaisse	Garlic Butter	Eggs and Tomato Casserole	Tomato and Cucumber Salad	
GINGER	Broiled Grapefruit	Bean Soup	Dust lightly over Steak	Roast Chicken	Cocktail	Buttered Beets	Cream Dressing for Ginger Pears	Stewed Dried Fruits
MACE	Quiche Lorraine	Petite Marmite	Veal Fricassee	Fish Stew	Creole	Succotash	Fruit Salad	Cottage Pudding
MARJORAM	Fruit Punch Cup	Onion Soup	Roast Lamb	Salmon Loaf	Brown	Eggplant	Mixed Green Salad	
MINT	Fruit Cup	Sprinkle over Split Pea	Veal Roast	Cold Fish	Lamb	Green Peas	Cottage Cheese Salad	Ambrosia
MUSTARD Powdered Dry	Ham Spread	Lobster Bisque	Virginia Ham	Deviled Crab	Cream Sauce for Fish	Baked Beans	Egg Salad	Gingerbread Cookies
NUTMEG	Chopped Oysters	Cream DuBarry	Salisbury Steak	Southern Fried Chicken	Mushroom	Glazed Carrots	Sweet Salad Dressing	Sprinkle over Vanilla Ice Cream
ONION Powder, Salt, Flakes and Instant Minced Onion	Avocado Spread (Powder)	Consommé (Flakes)	Meat Loaf (Instant Minced Onion)	Fried Shrimp (Salt)	Tomato (Powder)	Broiled Tomatoes (Salt)	Vinaigrette Dressing (Instant Minced Onion)	
OREGANO	Sharp Cheese Spread	Beef Soup	Swiss Steak	Court Bouillon	Spaghetti	Boiled Onions	Sea Food	
PAPRIKA	Creamed Seafood	Creamed Soup	Hungarian Goulash	Oven Fried Chicken	Paprika Cream	Baked Potato	Cole Slaw	
PARSLEY Flakes	Cheese Balls	Cream of Asparagus	Irish Lamb Stew	Broiled Mackerel	Chasseur	French Fried Potatoes	Tossed Green Salad	
ROSEMARY	Deviled Eggs	Mock Turtle	Lamb Loaf	Chicken a la King	Cheese	Sautéed Mushrooms	Meat Salad	
SAGE	Cheese Spreads	Consomme	Cold Roast Beef	Poultry Stuffing	Duck	Brussels Sprouts	Herbed French Dressing	
SAVORY	Liver Paste	Lentil Soup	Scrambled Eggs	Chicken Loaf	Fish	Beets	Red Kidney Bean Salad	
TARRAGON	Mushrooms a la Greque	Snap Bean Soup	Marinated Lamb or Beef	Lobster	Green	Buttered Broccoli	Chicken Salad	
THYME	Artichokes	Clam Chowder	Use sparingly in Fricassee	Poultry Stuffing	Bordelaise	Lightly on Sautéed Mushrooms	Tomato Aspic	

Stock-Pot: At one time the stock-pot method of preparing soup was very prevalent in North American restaurants. This method made use of the many trimmings derived from fresh vegetables and bulk meats. Now, however, most restaurant operators buy vegetables and meats which are already prepared for cooking. Therefore, the quantity of trimmings available are insufficient to rely solely on a stock-pot for soup preparation.

Bases: As the term implies, bases are commercially concentrated soup stocks which are available either as pastes or in dehydrated forms. Very often they are used in conjunction with trimmings developed in-house as well as other fortifiers. For example, cubed beef, whole clams, diced chicken or mixed vegetables may be added to produce an acceptable plated soup. These fortifiers might be purchased fresh, frozen, canned, or produced from in-house trimmings.

Soup bases are most commonly available in 1 and 3 pound jars. They are normally reconstituted about 5 to 1 by volume, depending on the consistency desired. Soups can also be prepared from packages of dehydrated vegetables such as split peas.

Canned single strength soups are ready to heat and serve. They are packed mostly in No. 5 and 50 ounce sizes. Canned single strength soups may also be purchased in individual portion size cans, which contain 7 to 8 ounces. A wide variety of canned soups are available ranging from clear broths to thick soups such as cream of celery, cream of chicken or heavy bean soups.

Canned condensed soups are similar to single strength soups, except, as the term implies, some of the water has been removed (or omitted). These soups can be purchased in No. 10 cans, although they are also available in No. 5 cans. Always consult the label on the can for instructions for reconstituting condensed soups. Otherwise, the following procedures might be useful.

- Dilute with an equal amount of water or milk (or 1/2 milk with 1/2 water) - mix - heat to serving temperature of 180°F.
- Water diluted thin soups should usually be brought to boiling and simmer a few minutes to bring out full flavor.
- Water diluted thick soups should usually be diluted with water a little at a time, mixing at the same time to prevent lumping and heat at 180°F.
- Cream soups diluted with all milk or 1/2 water and 1/2 milk should usually be diluted with liquid a little at a time - mix and heat slowly to 180°F to prevent scorching. A double boiler works best for milk diluted soups. Also, it is easier to control temperature and hold. Remember, milk is cold and takes longer to bring to a boil.

- Evaporated canned milk combined with water makes an excellent cream soup. Directions: Empty contents of condensed soup can into suitable container for warming. Open one can of evaporated milk and pour into empty soup can. Add enough water to evaporated milk to fill can. Mix this liquid with condensed cream soup. NOTE: For No. 5 cans, use one can evaporated milk, for No. 10, use two.
- It is best to start making all types of soups one hour before serving time.
- Soup warming equipment can be a soup pot heated on top of the stove, double boiler heated on top of the stove, of a fudge or chili warmer with temperature controls and stainless steel insert pot to hold soup in warmer with cover.
- A six ounce or eight ounce serving ladle can be used to serve soups, depending on the size of cup or tureen.
- Soups can be served with a garnish such as croutons.
- Individually packed soup crackers are usually served along side of soups.

The quality of soup is judged by its flavor, substance and consistency. The substance of a soup might be upgraded by adding chunks of meat or vegetable. For example, a commercial clam chowder may be improved by adding a few extra clams. Consistency might be improved by adding extra cream, or by boiling off more of the liquid. A high quality soup (except broths) will have a relatively high drained weight and a relatively low percent of pasta to other solids. A high level of pasta or starch reduces the flavor.

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AVAILABILITY

When planning menus and ordering produce, the buyer should keep in mind the seasonal availability of fresh produce, as well as the preferred varieties, grades and sizes. Sometimes substitutes have to be made on types and varieties because of the strong availability of alternate products.

In addition to relying on his or her contract produce distributor for advice, a food service director might want to keep abreast of product availability and price by subscribing to market news publications available from the U. S. Department of Agriculture. Write to the U. S. Department of Agriculture for the address of the terminal nearest you. Reports are published in the following cities.

Atlanta GA	Dallas TX	Louisville KY	Pittsburgh PA
Baltimore MD	Denver CO	Miami FL	St. Louis MO
Boston MA	Detroit MI	Minneapolis MN	San Antonio TX
Buffalo NY	Houston TX	New Orleans LA	San Francisco CA
Cincinnati OH	Kansas City MO	New York NY	
Columbia SC	Los Angeles CA	Philadelphia PA	

Besides availability, price ranges of fresh produce will vary widely in accordance with product condition, variety, origin, grade quality and size. Getting the right product for the right use consistent with local market conditions will not only save money, but can improve the quality of meals served. Normally, factors causing supply shortages cause poor quality and condition. Buyers must be prepared to substitute items which are in plentiful supply for items in scarce supply which may be of poor quality and overpriced.

ENHANCING CHARACTERISTICS

Variety. The variety for most produce items is important because differences in variety also represent differences in flavor, texture and appearance that can affect the acceptance and usage of a product. Variety preferences will vary geographically as well as seasonally. Be sure that the variety chosen is in ample supply locally and that it best fits your menu needs. For example, some areas of the country prefer McIntosh apples, others prefer Red Delicious, while still others like Stayman. Also, the availability of different varieties changes. Bartlett pears are available in August and September, while D'Anjou, Bosc and Cornica are available in the fall and winter.

U.S. Grade. Each fruit and vegetable can be grade designated. Common designation used by many is 85% U.S. No. 1. The grade refers to quality and appearance. Most produce sent through fresh market channels are U.S. #1 Grade. There are different categorical grade levels, i.e., Extra Fancy, Fancy U.S.#1, U.S.#1, Commercial, or Combination.

A "Combination Grade" is one which contains products from a lower and a higher grade. For example a combination grade for apples must consist of at least 50 percent Extra Fancy and the balance Fancy, as described in the USDA grade requirements. A combination grade may be a combination of two consecutive grade levels. Although the usual requirement is for at least 50 percent of the higher grade, some items require a different level. For example, fresh tomatoes require 60 percent of the higher level.

Some storable items such as apples, pears, grapes, citrus fruits, potatoes and onions are graded when packed and before storage. Although these items may be in excellent condition when graded, their "condition" may change before reaching the market. Accordingly, it is counterproductive to specify an Extra Fancy grade if, on arrival, the product has a high percentage of decay.

Product Condition. This is probably the most important and most overlooked attribute of produce specifications. Depending on local market conditions, the buyer must communicate:

- (a) the degree of maturity desired, i.e., green, mature, hard ripe, ripe, full ripe, etc. The degree of maturity of a product when ordered will depend on when the product is to be delivered, prepared and consumed.
- (b) the maximum tolerance on decay and bruising. A commonly used tolerance is "not more than 2%."
- (c) the temperature of the product on delivery, i.e., should the melons be refrigerated for immediate consumption or not refrigerated to permit further ripening.
- (d) The type of package used, i.e., crate, cartons, weight, new or used containers.

Origin. Like variety, there are important differences between growing areas that affect both the price and acceptance of fresh produce. California navel oranges are considerably different from Florida or Texas navels. Washington or Northwest apples have a different appearance than their Midwest or Eastern counterparts. Florida and California avocados differ, as do baking potatoes from Idaho, Washington and Oregon when compared with those from Maine, Wisconsin or New York. Again, depending on market conditions and a buyer's preferences, origin can be important.

Size. Size is a very necessary attribute to be included in the specifications. Different produce items are sized differently, for example:

- Count. More and more produce items are sold by count per container. Most western fruit is sold this way, i.e., citrus fruits, apples, peaches, nectarines, pears, avocados and melons. Count refers to the number of units per container. As with dozens per crate, the smaller the count number, the larger the size.
- Potatoes are sized as A or B, A being larger than B. Potatoes can have minimum sizes, such as 2" minimum or 4 ounce minimum. Baking potatoes also are sized by count - 80's, 90's, etc. 80 count potatoes are larger than 90 count.
- Dozens per crate. Corn is sized 4, 4-1/2 or 5 dozen per crate. The 4 dozen size has larger ears than the 5 dozen.
- Maximum or minimum inches or weight. For example, 1-7/8" minimum or 3" maximum; or cabbage - 8 lb. maximum.
- Row count. Some fruits like cherries are sized by the number of rows per layer, i.e., 10-1/2 rows, 1/row lb. Plums are sized 4x4, 4x5, 5x5 which indicate the number of units of fruit in each layer of a basket. Tomato sizes are 4x4, 5x5, 5x6, 6x6, 6x7, 7x7. Again, the smaller the count, the larger the tomatoes.
- Diameters. Diameters of tapered roots like carrots indicate measurements at the top. Sieve sizes of beans and peas indicate the diameter size of the product.

UNIT

Produce is packed in hundreds of different types of containers. Commonly used containers are bushels, cartons, hampers, wirebound crates, paper and burlap bags, 1/2 cartons, flats, and baskets. Berries are mostly packed in 12 pint flats or trays, cherry tomatoes in quarts and grapes and western tree fruit in lugs or cartons. More and more produce is being packed in cardboard containers rather than wood because it is less expensive.

Salad vegetables are those which are served fresh, uncooked, as salad side dishes and vegetable trays or as garnishes for other dishes or sandwiches. This group revolves around the lettuces which are used as the basic ingredients in garden salads; and cabbage, which is the basic ingredient of cole slaw. Then, there is a third group of salad vegetables which are used principally as garnishes for salads, on relish trays, as appetizers or hors d'oeuvres. Celery, radishes, green onions and green peppers are typical of the vegetables in this group.

A food service operator has three alternatives for providing salads to his patrons. The most common way is to buy the raw ingredients and prepare the salad (or slaw) from scratch. Another way is to purchase pre-prepared salad (or slaw) and add the dressing. A third way, which applies only to slaw, is to purchase it with dressing already added. Garnished vegetables can be purchased trimmed and ready for serving as hors d'oeuvres or for adding to mixed salads. Lettuce can be purchased pre-shredded for garnishing sandwiches.

There are several types of lettuce which can be used for salads and sandwich garnishes. By far the most common is the iceberg (or head) type. However, this type receives good support from Romaine, escarole, endive, chicory, Boston, Bibb and Chinese (celery) "cabbage." Chinese cabbage which is not a true "lettuce" belongs to the Crucifer (mustard) family.

FOOD FACTS

XI - CABBAGE

A salad made from cabbage is called coleslaw or slaw, which are names derived from the Dutch words for cabbage (cole) and salad (slaw), i.e., cabbage salad. Although slaw can be made from any of the several types of yellowish-green or white cabbage, as long as the heads are firm and crisp, red cabbage is normally not used for coleslaw, except maybe as a garnish.

Cabbage sold by U.S. No. 1 and Commercial:

High quality cabbage heads are reasonably solid and hard, heavy in relation to size and closely trimmed; stems are cut close to the heads and only a few outer wrapper leaves remain on each head. Early cabbage is not as firm or solid as late cabbage. However, soft puffy heads are of poor quality. Heads which show yellow leaves are over-mature. Heads which show defects due to insects or mechanical damage are a poor bargain, unless they can be purchased at low prices, low enough to pay for the extra trimming required to ready the heads for slaw.

Cabbage heads can be chopped, shredded or cut in a number of ways. Whereas, some people prefer a coarse slaw mix, others prefer a finer mix. Wash cabbage heads on the exterior only and chill the slaw to about 35°F before mixing or serving. Whole cabbage heads can be stored for weeks with good results. Store at about 32°F and keep moist. A relative humidity of 90 percent is most desirable.

FOOD FACTS

XI - CABBAGE

Fresh cabbage is grown widely throughout the U.S. and is available year-round. There are several common types: domestic, Danish, savory, red and Chinese. Chinese cabbage (sometimes called celery cabbage) is used mostly for salads. Although these other types of cabbage can be used for cooking, the savory type is best suited for this purpose.^{1/} White or green cabbages (as opposed to red) are sold by sizes as follows:

<u>Small</u>	<u>Medium</u>	<u>Large</u>
Under 1-1/2 lbs. except Danish and domestic which are under 2 lbs.	1-1/2 to 3 lbs. 2 to 5 lbs.	over 3 lbs. over 5 lbs.

Bags of fresh cabbage can be held for weeks at a temperature of about 32°F with a relative humidity of 90 to 95 percent. If held at higher temperatures or lower humidities the outer leaves may show some discoloration and have to be trimmed more closely before cooking.

FOOD FACTS

XI - CARROTS-FRESH

Carrot slivers are frequently used as a garnish for lettuce salads, cole slaw, and fruit salads. They are also used as a main ingredient in carrot salads made with jello and/or fruit. Carrot sticks are used on relish trays and to decorate cold platters.

Fresh carrots are available year-round. They come in different sizes, shapes and different degrees of red color, depending on the variety and area in which they are grown. Size designations for fresh carrots however, are limited to regular and jumbo. Carrots can be purchased by the box or by the bunch with full tops. They can be purchased topped, in which case the tops have been cut back to within 1" of the roots. Carrots can also be purchased packaged in polyethylene bags. These carrots are fairly well trimmed and are ready for final preparation. The latter two types of packs (topped and packaged) are the most popular with food service operators.

^{1/} Cabbage heads should be trimmed, cored and quartered before cooking.

Carrots which have been topped and further trimmed can be purchased according to four U.S. grades: Extra No. 1, Regular No. 1, No. 1 Jumbo and No. 2. The highest grade fresh (new) carrots are clean, firm and smooth; have good color and are practically free from damage. Carrots which grade U.S. Extra No. 1 or Regular No. 1 have diameters of not less than 3/4 inch nor more than 1-1/2 inch measured at the top of the root. The length of carrots in these grades should not be less than 5 inches. Higher grade Jumbo carrots have a diameter of not less than 1 inch nor more than 2-1/2 inches, and the length is not less than 5 inches.

Carrots can be held for 1 to 5 months if stored at 32°F and 90-95 percent relative humidity. Mature carrots can be stored longer than immature ones. Stored carrots have a texture which is coarser than new carrots.

Fresh carrots can be prepared for cooking by washing, trimming and peeling. They can be cooked whole or sliced or diced. Carrots are sometimes sliced crinkle-cut style.

See previous section for information on canned and frozen carrots.

Celery is a popular and versatile food service item. When trimmed or cut, it can be added to lettuce or fruit salads, served on relish trays, (stuffed or unstuffed), used to decorate cold plates or as an ingredient in meat salads such as chicken, tuna, shrimp, etc. When used in these manners celery adds a crispness to a meal or vegetable which other vegetables cannot duplicate. Although primarily used as a salad vegetable, celery is also frequently used in cooking. It is a popular ingredient in stews, soups, stuffings, or other meat and vegetable dishes.

Celery for use in restaurants can be purchased in several forms:

- In stalks, either in bulk, or trimmed and pre-packaged. In Commerce, a "stalk" means an individual plant; a "branch" is part of a stalk (the leaf).
- Pre-cut into various styles (chopped, diced or cut into branches or sticks) by local "salad plants" and packaged in film bags.
- Canned, chopped or diced. This type of pack is used primarily for cooking.

Stalk celery has to be trimmed (or partially trimmed if prepackaged), washed and cut before using. Other types of packs are ready to use.

Pre-cut celery can be purchased in cuts of various sizes. For example, it can be finely diced for blending into meat salads, chopped or cut diagonally for use in lettuce and fruit salads or for cooking. The heart branches can be cut Julienne style for serving as celery sticks, or trimmed branches which are ready for serving as is or for stuffing with cheese or other types of fillings.

Celery varieties may be classified by color, as green or golden. Commercially, green celery is called "Pascal" and this type accounts for about 85 percent of the celery volume marketed in North America. The outside branches, however, of most varieties are green and the inside branches are blanched greenish-white or white.

Stalk celery can be purchased in accord with three U.S. Grades: Extra No. 1, No. 1 and No. 2. High quality celery has branches which are fairly straight and not more than slightly curved or twisted, the branches are of good width and thickness and the heart branches are of reasonable number, length and stockiness; the stalks are compact and practically free from dirt or other foreign material; the branches are practically free from damage and especially pithy sections; the outer branches are generally green to light green in color; and the stalks are well-trimmed. Pithy, woody, stringy, cracked or limp celery is of poor quality. These conditions are caused by excess maturity or poor handling. Good quality branches should snap when broken.

If celery is in good condition on arrival, it will keep well for several weeks, provided it is held at a temperature of about 32°F and a relative humidity of 95 percent. At higher temperatures and low humidities, celery will deteriorate rapidly, sometimes in a matter of a few days. To prepare stalks of celery for eating, peel off the branches, trim and wash. Trimmed leaves and stems from the top can be put into vegetables or soup pots to add flavor. Trim off any pithy or damaged sections as well as the top of the butt and discard. Use a sharp knife for trimming, chopping, dicing or otherwise cutting, to avoid bruising and tearing the pieces.

When celery is washed in tap water, the temperature of the branches rise considerably. It is therefore important to re chill the stalks before serving. This can be done by holding in a refrigerator for a few hours or by immersing in chilled (ice) water for about 15 minutes. For best crispness and flavor always serve celery well chilled.

Chinese cabbage resembles celery or Romaine more than it does headed cabbage. It is the crisp vegetable which has been used extensively by Orientals for generations in the preparation of cooked dishes, as well as in salad plates. In recent years, Chinese cabbage has grown considerably in popularity because it is bulky and economical. It is used primarily as a salad vegetable in North America.

Chinese cabbage has long, tapering heads with light green, broad leaves that are solid and crisp. The heads average about 4 inches thick and 18 to 20 inches long. The green leaves are slightly wrinkled and thin with broad, white midribs. High quality heads are compact with crisp, fresh, green coloring. Yellowing or wilted leaves are signs of over-maturity or quality deterioration due to poor handling.

Chinese cabbage can be held in the kitchen for about one week, maximum, without significant quality deterioration, if held at a temperature of 35°F and a relative humidity of 95 percent. However, it should be used as soon after delivery as possible. To prepare the heads for serving, separate the leaves, trim and wash, preferably in chilled water. Use a sharp knife when preparing the leaves for salads to prevent bruising. The cuts can be used as the only lettuce ingredient in a salad or blended with other types of lettuces, such as iceberg or endive.

Cucumbers are used in food service almost exclusively for adding flavor and zip to salads and occasionally for garnishing other cold plates. Sometimes they are the main ingredient such as in a "cucumber salad." Cucumbers of a different type are also used for manufacturing pickles, but these are much smaller than salad cucumbers.

U.S. field grown cucumbers for salads are plentiful during the summer and available during the late spring and early fall. "Imports" are available during the winter, and so are greenhouse cucumbers. Cucumbers are often waxed prior to marketing to give them a bright, new shine and to reduce moisture loss. They are available in various sizes and shapes. A recently developed variety, which is claimed to be "burpless" and seedless, grows up to 16 inches long, but has a relatively small diameter.

Salad cucumbers can be purchased in accord with several U.S. Grades: Fancy, Extra No. 1, No. 1, No. 1 Small, No. 1 Large, and No. 2. The size requirements for most varieties are as follows:

FOOD FACTS

XI - CUCUMBERS

<u>Grade</u>	<u>Max. Diameter</u>	<u>Min. Length</u>
Fancy	2-3/8"	6"
Extra No. 1	2-3/8"	6"
No. 1	2-3/8"	6"
No. 1 Small	1-1/2 to 2"	none
No. 1 Large	2-1/4"	6"
No. 2	2-3/8"	5"

The most significant factor in cucumber quality is maturity. Cucumbers which are yellow or very large are likely to have seeds which are prominent and hard, and the pulp in the seed cavity is usually watery, jelly-like or stringy. Over-mature cucumbers usually yield so slight pressure of the thumb.

High quality cucumbers are not overgrown and are well colored a medium or dark green. They are fresh, firm, free from decay or injury and practically straight.

Cucumbers store fairly well and can be held for a week or two without significant quality deterioration if they are held at a temperature of about 50 degrees and a relative humidity of about 85 percent. Temperatures well below 50 degrees can cause chilling injury which is indicated by spots, pitting or tissue collapse. Shriveling is a sign that the humidity is not high enough. Cucumbers which are held in refrigeration at about 35°F should be used promptly, certainly within a week of arrival to prevent noticeable chill injury.

Although most varieties of cucumbers are peeled before slicing, others are sliced and served with the peel on. In any event, rinse cucumbers before slicing. Cucumber slices can be marinated in a mixture of oil and vinegar and spices to make them "burpless." Slices should be chilled when served. Large slices may be cut into wedges before they are used to garnish salads.

FOOD FACTS

XI - ESCAROLE, ENDIVE AND CHICORY

Escarole, endive and chicory are slight variations of the same species. Escarole has relatively straight leaves, whereas, the leaves of endive and chicory are fairly curly. Although these vegetables can be cooked and served as a side dish, they are used primarily as salad vegetables. These plants, particularly escarole and endive, can be used in salads as substitutes for iceberg or other lettuces, or they can be blended with other lettuces. When used in the latter manner, they lend a variety of shades, shapes and flavors to salads. Escarole, endive and chicory are slightly more bitter than other types of lettuces.

Escarole is a broad plant. The "heads" sometime measure 12 to 15 inches across before bunching. The leaves emanate from a rather narrow base. The foliage is deep green, slightly crumpled, and closely bunched; the center leaves are sometimes bleached to a light green.

Curly endive is more common in North American than French or Belgian endive, which are somewhat different in character. Curly endive grows in bunchy heads with narrow ragged-edge leaves which curl at the end. The center of the heads are yellowish-white and have a milder taste than the darker green outer leaves, which are slightly more bitter than green escarole leaves.

Some varieties of chicory are grown for their tops and are marketed as a salad vegetable. Other varieties are grown for their roots which are dried and ground. The product is marketed as an additive to or as a substitute for coffee. The tops of chicory plants are similar to endive. That is, the leaves are curly and slightly bitter.

Escarole, endive and chicory can be purchased in accord with a U.S. No. 1 grade, which is usually designated at the point of production. Since these vegetables are rather hearty when compared to other salad vegetables, they are likely to arrive in reasonably good condition. For best results, hold escarole, endive and chicory at a temperature of 35°F and a relative humidity of 95 percent. If the product arrives in good condition it can be held for a week or 10 days without noticeable quality deterioration.

Trim and wash escarole, endive and chicory before cutting. In fact, since grit might be present in the heads, it is advisable to soak the leaves, preferably in chilled water, before cutting. Once cut into a salad, these vegetables can often be held longer than the lettuces without discoloration.

In tonnage sold, Iceberg lettuce, commonly called "lettuce", is second only to potatoes among the vegetables. The quality of lettuce received depends upon the care with which it is harvested and how soon and well it is refrigerated after harvest. Lettuce requires thorough and consistent refrigeration and a high relative humidity. If not refrigerated as soon as it is harvested, the intense heat generated by the head will cause rapid deterioration. For this reason, probably no other vegetable is as well treated from harvest to consumer as is lettuce.

Head lettuce may also be purchased hopper ready, which means that the lettuce is cored, trimmed and cello wrapped in shrink film. This product is ready for chopping. Although available year-round, the quality of lettuce during certain seasons is not as good as during other seasons because of unfavorable weather conditions. Usually, when the quality goes down, prices go up due to the scarcity of good lettuce.

Lettuce can be purchased with wrapper leaves on or wrapped in a film in which only one wrapper leaf is left on each head. A standard pack of lettuce consists of heads in a fiberboard carton which when filled should weigh not less than 40 pounds and not more than 48 pounds. To properly occupy the space in a carton, unwrapped lettuce heads are packed with a varying number of wrapper leaves. Large heads may be packed with only 3 or 4 wrapper leaves, and smaller heads may be packed with more wrapper leaves, perhaps as many as 12. The number of wrapper leaves on a head of lettuce, therefore, has some bearing on the quality of the pack. Sometimes large heads may be packed 18 or 20 in an "unstandard" pack and smaller heads may be packed 30 to a carton.

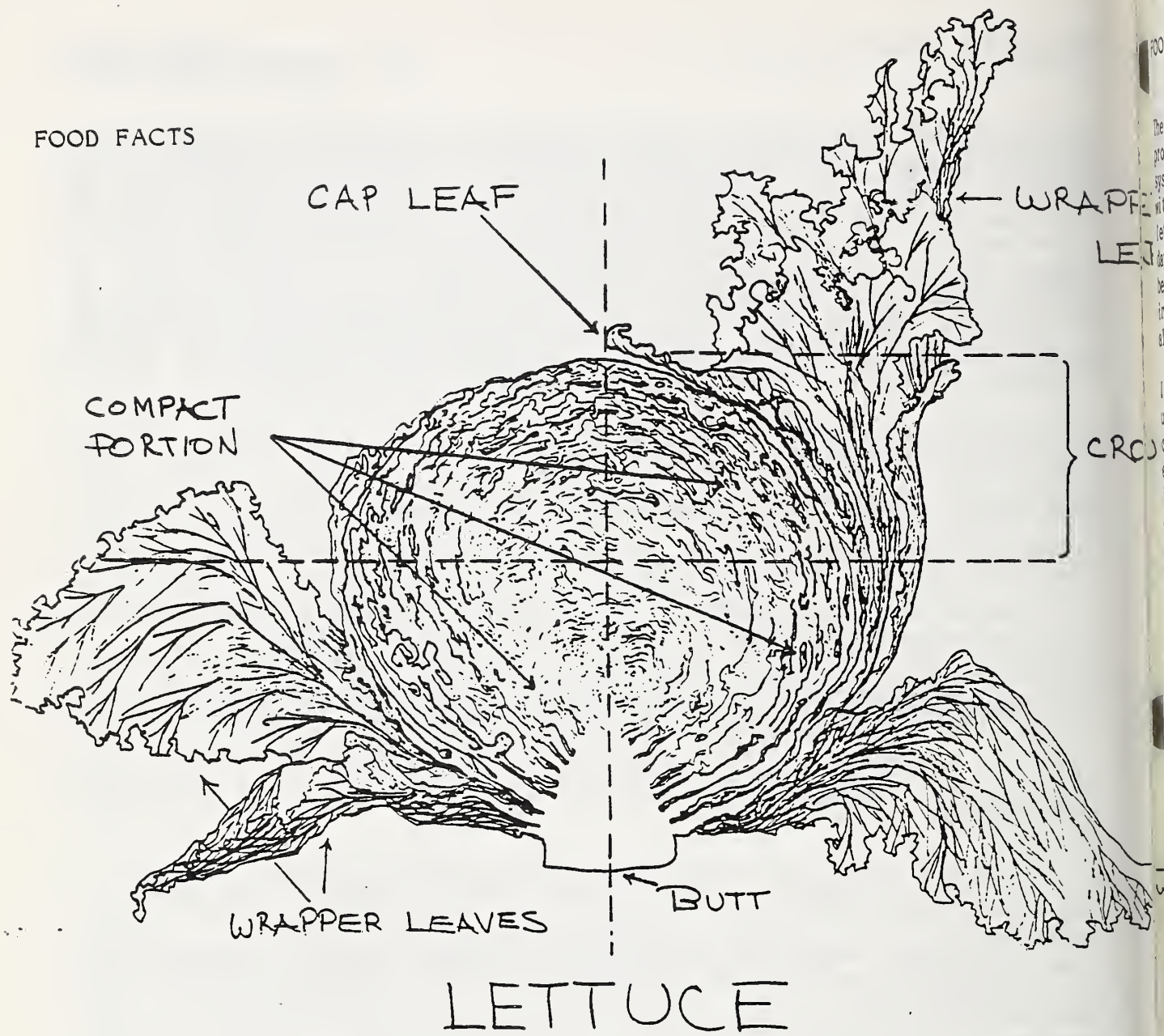
It is a good idea to purchase lettuce in accord with U.S. grades, of which there are three: Fancy, No. 1 and No. 2.

High quality lettuce heads possess the following characteristics:

- the heads are solid, not soft nor spongy.
- heads are fresh, which is indicated by a normal succulence and the outermost head leaves are not more than slightly wilted.
- at least one-half of the exterior surface of a head, exclusive of the wrapper leaves, has at least a light green color.
- the number of wrapper leaves should not exceed 3 (for a top quality pack). The more wrapper leaves, the less the buyer may get for his money.
- the butt should be trimmed off closely below the point of attachment of the outer leaves.
- the heads should not be excessively mature, which is indicated by a prominent seed stem (or core) and leaves with protruding mid ribs. See illustration.
- heads must be practically free of damage or other defects such as broken mid ribs, split or broken heads (burst), rib discoloration, tip burn, russet spotting, mildew, or injuries caused by freezing.

To retain top quality in lettuce from field to table, the proper temperature (35°F) and humidity (95%) must be maintained at all times. It is a good idea for the food service operator to check the internal temperature of lettuce on arrival, or purchase only from sources which maintain proper refrigeration at the warehouse and during delivery. The proper temperature of U.S. Graded lettuce is certified at time of loading at shipping point, which provides the buyer with some assurance that the lettuce was promptly and properly cooled at the packing end.

FOOD FACTS



The high quality of lettuce can be maintained for 2 or 3 weeks after harvest if properly handled. If one assumes that his lettuce has been in the marketing system for 7 to 10 days before it is received, then the product should be used within a week or 10 days. If, however, after arriving at the kitchen the lettuce receives abusive treatment, the quality may be retained for only a few days after arrival. Often it is not the quality factor alone which suffers, because heads which have deteriorated have to be carefully trimmed and inspected before serving. Therefore, product loss and kitchen productivity are also affected.

If healthy heads are to be used within a few days, they can simply be held under refrigeration until ready for use. If the relative humidity in the cooler is well below 90 percent, it will help to put a scoop of cubed ice in each crate. If the lettuce is to be held for longer than a few days, dress it immediately upon arrival and wrap the heads individually in a proper film. To dress, simply remove all of the wrapper leaves (one can be left on) lightly sprinkle the exterior of the head with water and wrap. Do not run tap water over or in the head before wrapping because this will cause the head to deteriorate even faster due to excessive moisture and the fact that tap water raises the internal temperature of the lettuce. Wrapped heads can be stored on a shelf in the refrigerator.

To prepare heads of lettuce for salads, first rinse the outside and remove lettuce wrapper leaves and the cap leaf as well as parts of any other outer leaves which may be damaged or discolored. Do not throw away the outer green leaves simply because they are green. Remove the core (the seed stem) from each head, trim off the butt end of the core and set aside. Cut the head into quarters and chop into salad size bites, using a sharp knife. While cutting and chopping, inspect the lettuce carefully for extraneous material which may have been trapped in the leaves during growth, and cut away any damaged or diseased areas (or tips).

Mix cut pieces of the green leaves in with other cut pieces. The core of the lettuce can be finely chopped and sprinkled over the chopped lettuce. The core is bitter and should not be served in bite size pieces, however, when finely chopped and mixed throughout the salad it adds flavor and character as well as slightly increases the yield.

There are two schools of thought one must consider in deciding whether or not to wash lettuce during salad preparation. One recommended practice is to run tap water into the head through the cavity created when the core is removed. Although this may add some value in sanitizing the interior of the head, it immediately converts a crisp head of 35°F lettuce into a not-so-crisp head of 70°F lettuce. The most practical procedure is to flush out the interior of a head of lettuce only if ice cold water is used or if the mixed salad is placed back in the refrigerator long enough to bring the temperature back to a crisp 35°F.

FOOD FACTS

XI - LETTUCE-ICEBERG (HEAD)

Once lettuce has been chopped into bite size pieces, other ingredients can be prepared and added. Different types of lettuce can be mixed and garnishes such as red cabbage, celery and radishes can be added. Salads should be kept well chilled until served. A common complaint among patrons is that salads are not well chilled when served.

FOOD FACTS

XI - LETTUCE-BOSTON AND BIBB

Boston and Bibb (sometimes called butter-heads) lettuces are similar in that they both are highly perishable and have soft, succulent leaves which provide a delicate character to any salad. Because these types of lettuce are not readily available year round and because of their delicate structure, they are not commonly used in food service as salads, except as a change-of-pace offering or in deluxe restaurants. The attractive leaves, however, are used frequently as under-layments for other cold dishes, to decorate buffet platters, and as garnishes for sandwiches.

Boston and Bibb lettuces have relatively small loosely formed heads. The outer leaves are either light or dark green, depending on the variety and the inner leaves may be yellowish. Use these lettuces within a day or two after purchasing for best results. Hold at about 35°F and at a relative humidity of 95 percent. Since grit or other extraneous material may be found in the loosely formed heads of Boston and Bibb lettuces, they should be thoroughly washed, preferably with chilled water, before serving.

FOOD FACTS

XI - LETTUCE-LEAF

There are many varieties of leaf lettuce, none of which have compact heads such as the iceberg type or even loosely formed heads similar to the Boston and Bibb types. Much of our leaf lettuce is grown in greenhouses and is sometimes called "Greenhouse Lettuce." The leaves are broad, tender, succulent, fairly smooth, and vary in color according to variety.

Because of their tenderness and perishability, leaf lettuce is usually sold locally and may not be readily available in some areas.

Leaf lettuce can be purchased in accord with two U.S. grades: Fancy and No. 1. High quality lettuce is well trimmed as indicated by a smooth short (3/4 of an inch) butt and the removal of slightly bleached or discolored leaves. Leaf lettuce is often used in manners similar to those described for Boston and Bibb lettuce. That is, the leaves are used as under-layments for other cold foods or as garnishes for buffet plates and sandwiches. They are sometimes used as a change-of-pace salad.

Leaf lettuce should be used within a day or two after receiving. Store at a temperature of about 35°F and a relative humidity of 95 percent. Inspect, trim and wash lettuce leaves before serving. If possible, wash in chilled water.

FOOD FACTS

XI - LETTUCE-ROMAINE

Romaine lettuce plants are tall and cylindrical with crisp, dark green leaves in a loosely folded head. The leaves are separated at the base.

Although available year-round, Romaine is sometimes in rather plentiful supply and is offered at prices competitive with iceberg lettuce. It is during these periods that food service operators might consider using Romaine consistently as a substitute or as a complement to iceberg lettuce. Romaine is more or less a standard ingredient in Chef and Caesar type salads. The green outer leaves and pale mid-ribs make an attractive and flavorful tossed salad as well. The leaves of the Romaine plant appear coarse, but are tender, sweet and tasty and have less bitterness than similar lettuces such as endive.

There are two types of Romaine available for food service: self-closing and loose-closing. The long, narrow leaves of the self-closing varieties curve inward at the tips and the inside of the leaves are well blanched. The loose forming varieties do not form a closed head.

Since the elongated heads of Romaine are difficult to pack in conventional cartons or packages, the plants are often damaged in transporting and warehousing, unless delivered from nearby producing areas. Therefore, the condition of Romaine upon arrival at a kitchen may vary considerably from one time to another. Although Romaine may be shipped as U.S. Grade No. 1 (the only grade), the condition of the product on arrival may not justify such a high rating. It is important to inspect Romaine carefully on arrival. Damaged plants which require considerable trimming reduce yield and increase salad preparation costs.

If held at a temperature of 35°F and a relative humidity of 95 percent, the delivered quality of Romaine can be retained for several days. It is necessary to carefully trim and wash Romaine before cutting to remove grit and bruised or otherwise damaged areas. Cut with a sharp knife to avoid bruising and rinse in chilled water if available. Romaine will be more crisp and flavorful if served thoroughly chilled. This means that the dressing should be chilled as well.

FOOD FACTS

XI - ONIONS-FRESH

Dry onions of the white and yellow varieties are used extensively as garnishes in preparing fresh vegetable salads. They are used either as rings or dices. While dry onions are also used widely for cooking, green onions are used almost exclusively for salad purposes, although they are sometimes cooked by preparing cream style. The green tops as well as the small bulbs are served whole on relish trays, or cut up and added to lettuce salads to add flavor, color and vigor.

Although green onions are marketed heavily during the spring and summer months, they are available year-round. They can be purchased in accord with U.S. Grades No. 1 and No. 2. High quality green onions are straight, young and tender, fairly clean and free from decay. The bulbs are firm and well trimmed and the tops have a good green color and are practically free from damage. Over-maturity and damages are the main causes of lower quality onions. When green onions are over-mature they are tough and stringy. Over-maturity may be indicated by a flabby neck or a fading of the green in the tops.

Green onions of high quality which are received at the kitchen within a week of harvest may be held for another 7 or 10 days if stored at about 32°F and a high relative humidity of about 95 percent. To serve, simply rinse and trim and rechill. Use a very sharp knife for cutting onions to prevent bruises.

There are two other types of small onion bulbs which are sometimes used as a substitute for green onions. These are leaks, which resemble very overgrown green onions and shallots (also echalots) which resemble green onion bulbs in size but have a semi-garlic flavor. They are often sold dry.

Although there are other types of peppers used in salads and for garnishing, the sweet pepper is by far the most popular. Other types of fresh peppers are the pimiento, which is used largely in manufacturing, and other green varieties such as the Cubanelle, Hungarian wax hot, long green hot, finger hot, and chili pepper.

Sweet peppers are used for cooking as well as salads. Sweet pepper halves, stuffed with a mixture of meat and rice, is a popular entree. Pieces of sweet peppers are used for flavoring other cooked vegetable dishes and meat platters. They are, however, standard ingredients in lettuce salads and are sometimes cut into strips or rings and served on relish trays and salad plates.

Although green is the most popular color, sweet peppers are also available in red and mixed colors. They also come in different sizes and shapes. The most common shape, however, is the bell shape, hence the name, "Bell Peppers." Although the fresh form is by far the most widely used, sweet peppers are also available in frozen form. Frozen, diced sweet peppers can be used for garnishing salads and plates or for cooking. Frozen pepper halves and slices are available for cooking. Sweet peppers can also be purchased canned, but they are suitable only for cooking.

FOOD FACTS

XI - PEPPERS-SWEET

Sweet peppers are readily available throughout the summer and early fall. They are in shorter supply during the winter and spring, although some supplies come from Florida, Mexico and certain countries in the Caribbean. Sweet peppers can be purchased in accord with U.S. Grades: Fancy, No. 1 and No. 2. The designated sizes are as follows:

<u>Grade</u>	<u>Min. Diameter</u>	<u>Min. Length</u>
Fancy	3"	3-1/2"
No. 1	2-1/2"	2-1/2"
No. 2	none	none

If the color is not stated on the label, the pack is assumed to be green. If the colors are red or mixed, the package should be so labeled.

High quality peppers have a fresh, bright appearance, and they are firm and thick fleshed. Immature peppers are usually soft, pliable, thin fleshed and pale. Low quality peppers may also be shriveled and dull. Quality peppers should be well shaped and free from damages or other defects.

If sweet peppers arrive at the kitchen soon after harvest and have been well refrigerated and handled, they may keep for up to a week, but don't count on it. For best results, hold them at a relative humidity of 90 percent and a temperature of about 50°F. and use within a few days. Low temperatures (35°F) and low humidity may damage peppers if they are held longer than a few days. To serve fresh bell peppers, first rinse, cut in half cross-wise and core, then cut into sizes and shapes desired. Keep cut peppers chilled at all times.

FOOD FACTS

XI - RADISHES

Red radishes provide a colorful and tasty garnish for any vegetable salad. They are also attractive and tasty additions to relish trays. In some areas white radishes are also well known and appreciated as a salad garnish. Whereas, red radishes are round, white radishes are shaped more like a small carrot. (Red) radishes can be purchased in bunches with tops on or "topped", which means that the tops are cut back to 2 or 3 inches in length. Radishes can also be purchased completely topped, partially trimmed, washed and packed in film bags. This type of pack is growing in popularity with food service operators. Radishes are available year round and can be purchased in various sizes and two U.S. Grades: No. 1 and Commercial. Size ranges are as follows:

	<u>Diameter</u>
Small	Under 3/4"
Medium	3/4 to 1"
Large	1 to 1-1/4"
Very Large	Over 1-1/4"

Size is not necessarily an indication of quality. Top quality radishes are clean, well formed, smooth, firm, tender and free from damage and decay. The pack should contain few, if any, under 5/8 inches in diameter. Radish quality is downgraded by over-maturity, which is indicated by pithiness of the root. Quality can also be downgraded by splits, cuts or bruises which require trimming.

Radishes store very well at a temperature of 32°F and 95 percent relative humidity. If radishes are not kept moist, they will shrivel. For this reason, radishes packed in film bags will normally stay fresh longer than radishes with tops. If properly protected, radishes can be held for several weeks without significant quality deterioration, but usually a week or ten days is border-line.

Prior to serving, radishes have to be washed and trimmed. If they are to be used as a garnish in salads, they should be cut into quarters or wedges. These forms are preferred over slices, which will dry out quicker. Always serve radishes freshly chilled.

Spinach is popular in some circles as a change-of-pace salad. It is sometimes served strictly as a "spinach salad" or mixed with lettuce. Other greens such as the young, tender leaves of Swiss chard, mustard and dandelion greens are sometimes used as a salad or as an ingredient in salads.

The moderate popularity of raw spinach as a salad vegetable is partly attributable to its common availability in pre-packaged form. Therefore, for a food service operator to use spinach in a salad, he need only purchase the number of packages required, inspect the contents and rinse, preferably in chilled water and shake dry. Spinach salads are often served with garnishes of fresh or frozen mushrooms and/or bacon bits with an oil and vinegar dressing. Packaged spinach can be held for only about 3 days at about 32°F without significant deterioration in quality.

If purchased in bunches, fresh spinach has to be inspected, trimmed and washed much more carefully than when pre-packaged. Bunched spinach can be held for about a week if the temperature is kept at about 32°F and the relative humidity at 90 percent.

High quality spinach leaves should be clean, fresh, tender and of a good green color. Yellow, discolored, wilted, bruised or crushed areas should be trimmed off. However, young, yellow or green under-developed heart leaves are of good quality and should be retained.

Tomatoes are used extensively for garnishing all types of vegetable salads and as the main ingredient in (sliced) tomato salads. Although tomatoes are subject to many variables, a food service operator's main concern is with ripeness and size. Strictly speaking, however, size is not a factor in tomato quality, but it is an important consideration in making buying decisions.

There are generally two types of tomatoes: regular and the cherry type, which is so-called because it resembles a cherry in size and shape. Tomatoes of both types are available year-round, either as field grown or as "greenhouse" tomatoes. During the summer months "local" green tomatoes are available in most geographical areas. Other times of the year, they are shipped into most regions from such warm weather areas as Arizona, Florida, South Texas, Mexico and California.

Although there are many different varieties of tomatoes, there are two general variety classes: the red and the green. Red varieties are green before they are red, but green varieties do not turn red when they ripen. Although used in some kitchens to obtain variety, ripe green tomatoes comprise only a small percentage of the total harvest. The ripeness of red varieties is designated by six official USDA color classifications as follows:

- 1) Green - "Green" means that the surface of the tomato is completely green in color. The shade of green color may vary from light to dark.
- 2) Breakers - "Breakers" means that there is a definite break in color from green to tannish-yellow, pink or red on not more than 10 percent of the surface.
- 3) Turning - "Turning" means that more than 10 percent but not more than 30 percent of the surface, in the aggregate, shows a definite change in color from green to tannish-yellow, pink, red or a combination thereof.
- 4) Pink - "Pink" means that more than 30 percent but not more than 60 percent of the surface, in the aggregate, shows pink or red color.
- 5) Light Red - "Light red" means that more than 60 percent of the surface, in the aggregate, shows pinkish-red or red, provided, that not more than 90 percent of the surface is red color.
- 6) Red - "Red" means that more than 90 percent of the surface, in the aggregate, shows red color.

Any lot of tomatoes which does not meet the requirements of any of the above color designations may be designated as "mixed color."

Tomatoes are marketed in various colors to permit them to ripen during different stages of the marketing process. For example, tomatoes may be shipped as greens, breakers, or turning. A distributor might hold them until they are pink, light red or red and deliver them in accord with the buyers' requirements. Ripening can be speeded up by placing tomatoes in a moderate light. All tomatoes which have not reached the ripe stage can be held at room

temperature (70°F). If unripe tomatoes are held at a temperature below 55°F they are subject to chilling injury, which seriously increases the rate of decay. However, once a tomato is fully ripe, it should be stored under refrigeration.

Tomatoes which are picked only when they are mature, but in some stage of green, can attain just as much flavor and succulence as so-called "vine ripe tomatoes." However, tomatoes which are picked before they reach maturity (while still growing) will not attain good taste and texture, although they may attain a full red color. Immature tomatoes have a "green" taste. Tomatoes are generally not marketed fully ripe because they bruise easily while being handled. Bruising invites decay.

The color (or degree of ripeness) at which a food service operator buys his tomatoes depends on how long they will be held before using. Often they are purchased red ripe, placed directly in a refrigerator and used within the week. Often tomatoes which are received while still pink or light red are served immediately with unacceptable results. Such tomatoes are not fully ripe and have not yet reached their peak of succulence and texture.

Factors of quality, other than ripeness, which influence the acceptance of tomatoes are as follows:

- Seed cavities and seeds should be well developed.
- Tomatoes should be fully ripe when eaten.
- Fully ripe tomatoes yield readily to slight pressure.
- Tomatoes should be well shaped and the skins fairly smooth.
- They should be reasonably free from scars, growths, cracks, bruises, decay spots, and puffiness.

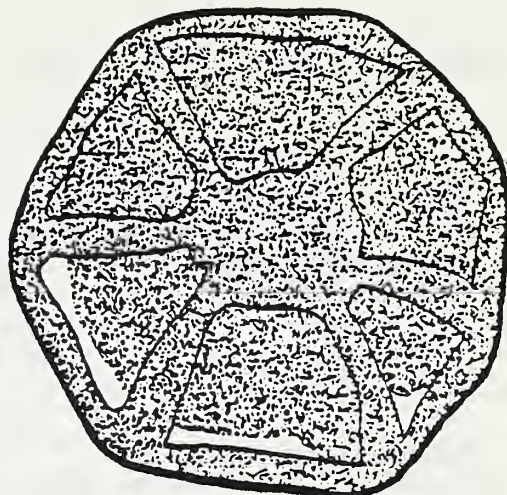
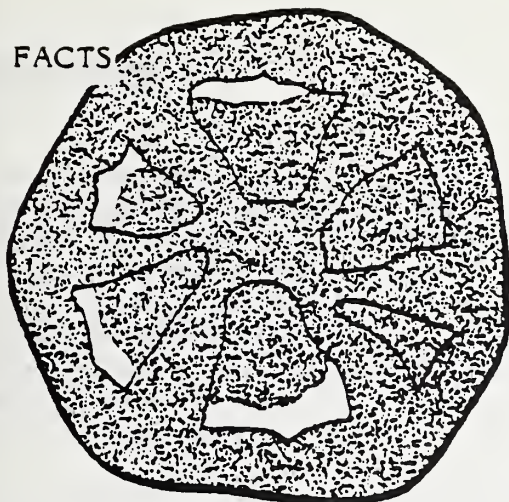
Often spaces (puffiness) between the walls and the flesh in the seed cavities detract from the appearance of the tomato when sliced or wedged.

Field grown tomatoes can be purchased in accord with several U.S. Grades: No. 1, No. 2, combination of 1 and 2, and No. 3. Greenhouse tomatoes can be graded in accord with two U.S. Grades: No. 1 and No. 2.

Tomatoes are designated as "mature" when they have reached, or nearly reached, their maximum size regardless of color. Mature tomatoes can be purchased in a wide range of sizes, which can be designated in any one of three manners in accord with USDA Standards. The most common methods of size designation are either by terms such as small, large, etc., or by the number of tomatoes per layer in a standard box. For example, the designation 7x8 means that there are 7 tomatoes in one direction and 8 in the other for a total of 56 tomatoes per layer. Tomato sizes can also be designated in terms of "diameters", stated in inches or millimeters. Official size designation for field grown tomatoes are as follows:

PUFFINESS

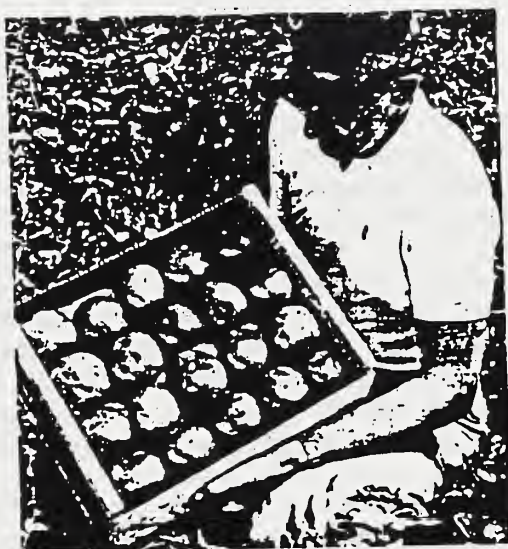
TOMATOES



LOWER LIMIT U. S. No. 1

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

ON-949



4x5 Packs {size}

<u>Term</u>	<u>Layer Pack</u>	(Millimeters) <u>Diameter Range</u>
Extra Small	7x8	48 - 54
Small	7x7	54 - 58
Medium	6x7	58 - 64
Large	6x6	64 - 73
Extra Large	5x6	
	5x5	73 - 88
Medium Large	4x5	
	larger	88 - --

Size classifications for greenhouse tomatoes are as follows:

Small-	under 3-1/2 ounces
Medium-	from 3-1/2 to 9 ounces
Large-	over 9 ounces

Tomatoes are prepared for serving by rinsing, trimming the stem end, cutting in half and then slicing or wedging. Cherry tomatoes are often served whole if they are bite size. When cutting tomatoes, use a very sharp knife so that the slices and wedges will remain fully intact. Halved tomatoes can be cored and stuffed with meat or fruit salad mixes and served as a salad or cold plate. Tomatoes served in this manner are sometimes peeled before stuffing.

A number of other food items are used as salads or garnishes. For example, cooked green, wax and other beans are used in cold "bean salad." In fact, most any type of cold leftover bean or pea can be added to salads. Green tomatoes, peppers, onions, celery, etc., are used in "chow chow" salads; anchovy fillets in Caesar salads; avacados in Mexican style salads; Julienne of chicken, tongue or ham in Chef salads; and bits of bacon or mushrooms in spinach or other salads. Diced, sharp cheese is used in various types of salads, as well as sliced rutabagas, green olives and chives. Canned hearts of palm can be used as a salad or to garnish other salads. Anise is sometimes used to flavor salads and so is watercress, which is also popular as a garnish for meat platters.

Another popular garnish is red cabbage which can add color and crispness to lettuce salads. Garlic is very popular for garnishing meat dishes and is sometimes used in vegetable salads. Croutons (toasted bread cubes) are a favorite topping on many salads. Raisins and crushed pineapple are favorite garnishes for cole slaw.

Two vegetables which make significant contributions to the preparation of tasty vegetable salads are artichokes, sometimes called globe artichokes, and parsley. Artichoke hearts can be wedged and added to salads as a garnish or they can be stuffed with various cold "salad" mixes. They are available either in fresh form or processed and packed in glass, usually with brine. Sometimes they can be purchased frozen. Fresh artichokes are available only during the winter and early spring except from time to time when they may be shipped in from off-shore during the off-seasons. They can be purchased in accord with U.S. Grades No. 1 and 2.

Parsley tops are used as a garnish, for numerous vegetable and meat dishes and cold platters. Parsley is actually an herb which can also be marketed with the roots attached. The roots are used as a cooking vegetable. High quality parsley has dark green, finely divided, often curled, fragrant leaves. It can be held for a week or more at a temperature of 35°F and a relative humidity of 90 percent. Wash and chill before serving.

Many food service operators have access to prepackaged dry salad mixes which are produced in specialized salad plants. These plants also provide other types of salad vegetables such as whole celery branches, whole radishes, whole cherry tomatoes, etc., which have been pre-trimmed and washed. They also produce vegetable sticks or dices (celery, carrots, peppers, etc).

Pre-mixed salads are prepared from one or several types of vegetable greens, depending on availability, prices and customer preferences. A standard mix is 55 percent iceberg lettuce, 40 percent other lettuce and 5 percent garnish vegetable, usually shaved carrots, diced or sliced radishes and shredded red cabbage. Food service operators can also obtain shredded iceberg lettuce for use in garnishing sandwiches.

Cole slaw mix is made from chopped or shredded cabbage with carrot shavings included or packed in an accompanying pouch. Lettuce and slaw salads are normally vacuum packed in 5 or 10 pound film bags. The raw material is trimmed, inspected and chopped with machines which have very sharp knives to prevent bruising and tearing. Once a mix is blended, it is thoroughly washed in a rotary drum, usually with a deoxidizing agent, and spun dry. This is an essential part of the operation because wet salad has a very short market life. Finally mixed salads are packaged in shrink film by a vacuum process (or a small amount of nitrogen gas may be injected into the package to replace the oxygen).

Packaged salad mixes must be kept at a temperature of about 32°F throughout the holding period before consumption or deterioration will set in. For best results, food service operators should order prepared salads twice a week. However, if stored at 32°F, very top quality iceberg lettuce salad can be retained for 5 to 7 days. Salads made from escarole or endive can be held a day or so longer than those made with iceberg and other types of lettuce.

Cole slaw mix can be held for 7 to 10 days without significant quality loss. However, never leave bags or partial or opened bags of pre-mixed salads of any type at room temperature (or exposed to the air) for more than a few minutes and always serve them thoroughly chilled.

It is neither necessary nor desirable to rinse a pre-mixed salad before serving. Simply dish up and add other garnishes not included in the mix. For example, tomato wedges, diced bell peppers or onions. Sliced onion tops may be added just before serving.

Pre-mixed cole slaw can be purchased with the dressing already added. This product is packed in strong film bags which are inserted in heavy duty fiber board cartons. The most usual size of pack is 30 pounds. A slaw mix of this type can be modified in the kitchen by adding other ingredients such as crushed pineapple and raisins. Freshly made cole slaw has a shelf life of about 7 to 10 days if held at 32°F. Keep under refrigeration always and serve thoroughly chilled, everytime.

Outside of certain items such as potatoes for baking, turnips and rutabagas, onions, eggplant and to a limited extent squash, corn on the cob, cauliflower, broccoli and maybe green beans, most vegetables utilized in food service are either frozen or canned.

However, the following portions of this text treat fresh vegetables which may be used in food service cookery. Some minor items are omitted due to space constraints.

Menu-wise, fresh vegetables for cooking (as opposed to salad vegetables) can be divided according to their starchiness and color. Examples of starchy and white vegetables are potatoes, rutabagas and turnips, etc. Green lima beans, green peas, corn and similar vegetables are considered to be mid-starches. Spinach, green beans, broccoli, etc., are relatively low in starch. In preparing menus, it makes good sense to combine high starches with low or mid-starches.

Color also plays an important part in menu planning. For the most pleasing eye appeal, combine contrasting colors. For example, white potatoes and cauliflower (white) lack eye appeal, while white potatoes and green beans make a pleasing combination.

Although asparagus is available in white form, most asparagus is green. White asparagus is the same as green except the stalks are bleached by covering the crowns with soil several weeks before harvesting. Although asparagus is used mainly as a side dish, it can be used in numerous other ways: in salads, soups, casserole dishes or as garnishes. Asparagus can be purchased fresh, frozen, or canned.

Fresh asparagus is purchased according to USDA Grades No. 1 or No. 2. U.S. No. 1 consists of stalks which are well trimmed and fairly straight. Stalks are free from damage caused by spreading tips, dirt, disease, insects or other means. Unless otherwise specified, stalks of U.S. No. 1 grade asparagus are not less than one-half inch in diameter, and except for white asparagus, at least two-thirds of the length of each stalk must be green.

Fresh asparagus is available February through June and is sold in bunches which weigh not less than 2 pounds. The number of stalks per bunch depends on the diameter of the stalks. Sizes are designated as follows:

Fancy:	68 to 120 stalks per bunch.
Small Extra Long:	43 to 67 per bunch - not more than 10 percent of the stalks may be less than 6/16 inches in diameter.
Standard Select:	29 - 42 per bunch - not less than 6/17 inches in diameter.

FOOD FACTS

XI - ASPARAGUS-FRESH

Large:	Also called extra select - 21 to 28 per bunch - not less than 7/16 inches in diameter.
Jumbo:	15 to 20 stalks per bunch - not less than 13/16 inches in diameter.
Colossal:	Not more than 14 stalks per bunch.

Fresh asparagus requires careful and cautious handling because it deteriorates very rapidly at temperatures above 36°F and especially at ordinary room temperatures. Inadequate refrigeration will cause loss of sweetness, tenderness and flavor. Also, the butts of asparagus stalks must be kept moist to prevent the development of woodiness. If held at below 36°F and at a relative humidity of 95 percent, the high quality of fresh asparagus can be maintained for 5 to 10 days, depending on the length of time since harvest and the care the product received in transit.

To prepare fresh asparagus for cooking, cut the white portions from the butt ends and wash the tops in a large pan or sink half full of hot water, agitating gently for about 3 minutes. This relaxes the heads and scales, permitting any soil to work loose and settle. Then rinse thoroughly in cold water, letting spears soak for about 10 minutes to freshen.

To properly cook asparagus stalks, stand them in a deep pan with the butt ends in 2 inches of water. This boils the heavy ends while steaming the tender tips. A wire basket is useful to suspend the spears. Cover and cook for 15 to 20 minutes or until just tender.

FOOD FACTS

XI - BEANS, GREEN, FRESH

Green beans which are also called snap, string, pole or bush beans, come in several different types and styles. The two main types are green and wax. Wax beans are so called because of their waxy yellow color. Italian or "Romano" green beans are large flat beans. Shellie beans are a combination of young green string beans and mature, hulled shell-out beans.

The quality of beans are judged by their tenderness. Generally, beans with smaller diameters are more tender than larger beans. Beans vary in diameter from 1 to 6 sieve. The length of a bean has very little influence on quality. As beans age they lose their bright green color.

Fresh beans are not widely used in restaurants because of the cost of preparation. However, fresh beans can be purchased in bushel or 9/10 bushel baskets or crates. Although fresh beans are available year-round, they are most available from May through October. They are best stored at a temperature of 45°F to 50°F and a relative humidity of 90 to 95 percent. Under this environment, fresh beans can be kept for about one week without excessive wilting. Lower temperatures are not recommended because they may cause pitting and russet discoloration.

FOOD FACTS

XI - BEANS, GREEN, FRESH

Fresh beans are prepared for cooking by washing and trimming. The beans are also "snapped" if they are to be cooked in this manner. Cook fresh beans in moist heat until they are tender. Over-cooking destroys texture and nutrition.

FOOD FACTS

XI - BEANS, LIMA, FRESH

Although frozen and canned lima beans are used extensively by food service accounts, very few establishments use fresh limas because of the labor involved in preparing them for cooking.

Several types of lima beans are available. The Fordhook variety, a name often shown on labels, is a large thick bean. Several varieties of lima beans have small, thin beans. These are usually called baby limas. Lima beans are white, yellow, or green, depending on their maturity when harvested. Each color has its own flavor. Green limas are usually the youngest beans.

Spackled butter beans are another variety of lima beans, found mostly in frozen form. They are larger than most baby lima beans and have a different flavor. These beans range in color from green, pink and red to lavender and purple, with brown, purple and other speckling.

Fresh lima beans can be purchased by the bushel but they cannot be stored for more than a few days if quality is to be retained. For best results, store at 32 to 40°F.

FOOD FACTS

XI - BEETS, FRESH

Canned or pickled red beets are popular with food service operators because they add variety and color to menu offerings. Fresh beets are seldom used at food service establishments because of the labor required to prepare them. Since beets do not freeze well, they are available in this manner only when prepared "Harvard" style, which means they are packed with a slightly thickened, sweet vinegar sauce. Frozen Harvard beets are packed in disposable steam table trays.

Canned beets are available whole, sliced, quartered, diced, Julienne (strips), and Harvard style. Do not confuse red beets with the white variety, which are sugar beets, and the varieties grown for stock feed. The tops of young red beets are sometimes harvested and sold as beet greens, with or without their young, tender roots.

Fresh beets are sold as "bunched beets" with tops not less than 6 inches long. They are also sold with short, trimmed tops not more than 4 inches long or as topped beets, with tops removed to not more than 1/2 inch in length. Although fresh beets are available year round they are most plentiful from May through October. Fresh beets can be purchased as U.S. No. 1 or No. 2 Grades. Top quality beets are practically free from defects such as bursts or bruises and show little or no signs of over maturity.

Although some food service managers purchase fresh broccoli from time to time, most establishments use the frozen forms. Fresh broccoli is rather labor intensive to prepare for cooking. Because of the tenderness of the florets, broccoli does not can very well and is seldom used in this form.

Fresh broccoli is available in quantity from September through March and is sold in bunches. Good quality broccoli (U.S. Grade Fancy) is fresh and green with compact bud clusters which have not opened to show yellow flowers. The color is dark green, sage green, or purplish green, depending on the variety.

Toughness and woodiness of stalks and branches are signs of quality loss. Yellow and wilted leaves indicate staleness. Avoid broccoli which is flabby or noticeably bruised.

Fresh broccoli is highly perishable and top quality can only be maintained for a few days and then only if the product is held at a high humidity. Although a holding temperature of 50°F is satisfactory, it is a good idea to ice broccoli or sprinkle it often to maintain freshness.

Fresh broccoli should be trimmed, washed carefully and inspected before cooking. The more tender the heads, the more gently broccoli has to be cooked. Do not overcook. The stalks can be served with cheese or other type of sauces added.

Since fresh brussels sprouts can be stored after harvesting for 3 to 5 weeks at 32°F and at a relative humidity of 90 to 95 percent, and since they do not require intensive labor to prepare for cooking, they are sometimes purchased fresh. However, since frozen brussels sprouts are even easier to prepare, this form is widely accepted by restaurants. Brussels sprouts do not retain their compactness when canned, and are seldom purchased in this form.

Fresh sprouts are a "winter" vegetable and thus are available in some quantities from September through March. To qualify for a U.S. Grade 1, brussels sprouts must be young and tender and free from noticeable defects. Firm sprouts which yield slightly to moderate pressure are of high quality. They are well trimmed and free from sand and other defects.

High quality sprouts have a bright green color. Avoid sprouts with yellow or yellowish-green leaves. Older sprouts develop a strong odor when cooked.

Wash fresh sprouts thoroughly before preparing and remove any loose or discolored leaves. Trim the stem ends but do not trim too much or the leaves will detach from the heads. Cook slowly only until tender.

FOOD FACTS

XI - CAULIFLOWER-FRESH

Cauliflower is available in fresh and frozen form. Since cauliflower does not can very well, it is seldom available in this form, except as pickled cauliflower. Fresh cauliflower is available throughout most of the year except for June and July, when it is in short supply. Because of the care required to prepare fresh cauliflower for cooking, food service operators are more inclined to purchase their supplies frozen.

Fresh cauliflower is available either as U.S. No. 1 Grade or ungraded. Good quality is indicated by white or creamy-white, clean, firm, compact flower clusters which are closely united and solid. Cauliflower heads should not be less than 4 inches in diameter and jacket leaves should be fresh, green and brittle. Although size is not a measure of quality, most varieties produce heads up to 8 inches in diameter.

Poor quality is indicated by spotting or browning of the florets. Loose, open flower clusters signify over-maturity. Avoid heads which have been damaged by mechanical injury, insects or freezing. When possible, purchase heads which are pre-wrapped in protective film. Usually, only the higher quality heads are pre-packaged.

Cauliflower can be held 3 to 4 weeks after harvest provided the cooler has a temperature of near 32°F and a relative humidity of about 90 percent. Store heads with the tops down to prevent the accumulation of moisture on the florets. To prepare for cooking, trim and wash heads carefully. Handle heads gently because they bruise easily. Cook cauliflower with care and do not overcook. Serve buttered or with a cheese or other sauce.

FOOD FACTS

XI - CORN-FRESH

Sweet (green) corn on the cob can be purchased fresh or frozen. Whole kernel corn is available frozen or canned. Cream style corn is available in cans. Sweet corn differs from field corn in that it is truly sweet and field corn is not.

Fresh corn on the cob is seldom served in food service establishments. The reasons for this are not quite clear. Some operators think it is too messy for patrons, others simply say, "It is not customary." Sweet corn is available from Florida in the Spring and Fall and heavily available from many areas during the Summer months. The yellow varieties which are high in Vitamin A are more plentiful than white varieties which have virtually no Vitamin A.

Whereas, most sweet corn is sold with the husk on, it can be purchased dehusked and prepackaged, ready for the stove. According to U.S. standards, top quality fresh corn is immature and tender, with even rows of well-filled kernels which give a slight resistance when pressed. Quality corn is free of worms and damage.

Corn has to be vacuumed cooled as soon as it comes from the field and kept refrigerated throughout. If not, the heat generated by the ears will cause a rapid conversion of the sugar to starch, which makes the kernels tough and tasteless. Corn can be held in the kitchen for 3 to 7 days, depending on its "freshness" on arrival. Hold at a temperature of about 32°F and a relative humidity of about 90 percent. Do not stack ears of corn high because the interior will not refrigerate properly.

Dehusk, inspect, wash and trim corn carefully before boiling and serve immediately after cooking, while steaming hot.

Eggplants must be purchased fresh since they are not normally frozen or canned. Although eggplants are used extensively in Italian style restaurants in such dishes as eggplant parmesan, they are used sparingly in other types of food service. The reasons given for this are that they are labor intensive to prepare and since they are not in plentiful supply year-round, prices fluctuate considerably.

Fresh eggplants are packed in bushel baskets, bags, or wirebound crates. They are packed according to size, which is sometimes denoted by count per package. Large sizes from 3 to 6 inches in diameter are more desirable.

When packed according to standards of the U.S. Department of Agriculture, eggplant can grade Fancy, U.S. No. 1 or U.S. No. 2. Top quality eggplants are firm and heavy in relation to size. They have a uniform dark, rich, purple color and are free from scars, cuts or signs of disease. Avoid eggplants which show signs of shriveling or decay. Decay appears as brown spots on the surface and may spread very rapidly.

Eggplants cannot tolerate cold temperature, so hold them at about 50°F and a relative humidity of 85 to 90 percent. Eggplant can be held under these conditions for 3 to 7 days, depending on the treatment they received during marketing and the elapsed time from harvest. Eggplant can be served by slicing and baking or breading and frying, or in casseroles.

There are many types of leafy greens which can be used interchangeably. They include spinach, kale, collards, turnip tops, mustard greens, swiss chard, dandelion greens, beet tops and cabbage sprouts. Although some managers use fresh greens from time to time, frozen greens are preferred by most operators. Canned greens are used in some establishments.

FOOD FACTS

XI - GREENS-LEAFY FRESH

Fresh greens are available in some form year-round. They can be purchased by the bushel (or part bushel) in which case they require sorting, trimming, and careful washing before serving. In some areas leafy greens can be purchased prepackaged, which means that they have been sorted, trimmed and washed. Prepackaged greens require cursory inspection before cooking to sort out damaged or discolored leaves, and detect grit.

Although the character and flavor of leafy greens will vary from one type to another, top quality packs have a fresh green color and are practically free from traces of wilt. The leaves are crisp, well trimmed and free from damage. Certainly the packs must be practically free from grit or other extraneous material. The most tender leaves have small ribs. Heavy protruding ribs are an indication of over-maturity.

Leafy greens are very perishable and require a temperature of about 32°F and a relative humidity of 90 to 95 percent to maintain top quality. Most types of greens have a market life of 7 to 10 days from harvest and therefore, for best results, hold greens only a few days at the restaurant before serving, even if holding conditions are ideal. If a high humidity cooler is not available, pack greens in crushed ice. To retain the quality of greens, cook with a minimum of water until tender and serve shortly thereafter.

FOOD FACTS

XI - MUSHROOMS-FRESH

Although not truly a vegetable, the mushroom is treated as one in commerce. The mushroom is actually a fungus and commercial packs are not to be confused with toadstools and classes of mushrooms which are poisonous. Mushrooms are grown indoors from spores on large "composted" trays under highly controlled conditions of humidity and temperature.

They are available fresh, frozen and canned. Although mushrooms are used primarily as a cooking vegetable, they are sometimes used, uncooked, to garnish salads.

Fresh mushrooms are available year round and are packed in 10 pound baskets for institutional use. Smaller quantities can be purchased, if necessary in 1/2 and 1 pound baskets. Whole mushrooms can be purchased in accord with U.S. Standards for Grades No. 1 or No. 2. Top quality fresh mushrooms are mature, firm, well-developed, fairly well-shaped, well-trimmed and free from open veils, diseases, spots, insect injury and decay.

Lesser quality mushrooms show "open veils." This condition is caused by over-maturity, improper handling or other reasons. Open veils are evident when the caps have expanded to the extent that the protective coverings or "veils" which join the margin of the caps to the stems have broken and exposed the gills or underside of the caps. The larger the percentage of open veils, the lower the quality.

FOOD FACTS

XI - MUSHROOMS-FRESH

Excessive defects will also lower mushroom quality. Defects are evidenced by rough, fleshy butts that are not well-trimmed. If well-trimmed, the length of a mushroom stem will not exceed the depth of the cap. Any other damage or discolorations which require that the mushrooms be further trimmed in the kitchen also lower the quality and value of the mushroom.

Mushrooms are classified according to size. Small to medium sizes can measure up to 1-5/8 inches in diameter at the cap. Large sizes can measure over 1-5/8 inches.

Fresh mushrooms which leave the packing shed at a high quality level can degenerate if not properly handled and refrigerated in-transit. Mushrooms are very perishable and require a temperature of about 32°F. The longer the holding time beyond 3 or 4 days, the faster the quality will degenerate.

Wash and trim mushrooms before using. They can be cooked whole or cut into various pieces. Mushrooms can be cooked by sauteing or by other means and served as a vegetable. More often than not, however, they are used for cooking and garnishing main course items and sauces.

FOOD FACTS

XI - OKRA-FRESH

Although not well known nationally, okra is used in one way or another by most food service operators in North America. Whereas some operators may serve it as a vegetable side dish, others may use it as an ingredient in soups and stews. Okra is available fresh, frozen and canned. Since fresh okra is seasonal and requires washing and trimming before cooking, most restaurants prefer the stove-ready frozen packs. Canned okra is popular for using in soups and stews.

Fresh okra is readily available in most market areas from May through October. It is occasionally available off-season from supplies which are imported from Mexico, Central America and several Caribbean countries. The quality of okra is determined largely by the size of the pod. The smaller the pod, the more tender the okra. Large pods are tough and stringy. Pods over 4-1/2 inches in length are suitable mostly for slicing and using in soups and stews. Only the smaller pods should be used for boiling whole or for slicing, breading and sauteing.

Although fresh okra is very perishable, a holding temperature of 50°F and a relative humidity of about 85 percent is suitable if the okra is going to be held for less than a week. Prepare fresh okra for cooking by washing, removing the caps and trimming. Do not overcook small, tender pods when boiling.

Fresh (dry) onions are available in different sizes, flavors, colors and shapes. There is a type for almost any kitchen use. There are large onions for slicing, small ones for boiling and even smaller ones (pearl type) for pickling or garnishing. Some varieties are strong and others are mild. Some are so mild they are referred to as "sweet" onions. Some varieties have yellow skins, others white skins and some red skins. While some varieties are almost flat, others are globe-shaped. Although most onions used in North American food service are purchased fresh, processed onions are increasing in importance. Processed onions are available either frozen, canned, pickled or dehydrated. Green onions (sometimes called spring onions) are used as a salad vegetable and are discussed in another section.

Fresh onions are plentiful throughout the fall and winter months. Supplies are lower during the late spring and summer months. Food service operators may use fresh onions for cooking, garnishing, slicing for sandwiches or breading and frying. Although there are types best suited for each purpose, the Bermuda type is a good, general purpose onion. Large, white, mild flavored globe onions are excellent for sandwiches or for garnishing salads. Very strong flavored onions such as the creole type are preferred by some operators for flavoring cooked items or for garnishing salads or other dishes.

Fresh onions can be purchased in accord with U.S. grades and specific sizes. The USDA has issued three separate grades for onions: one set for the Bermuda-Granex-Grano type, commonly referred to as Bermudas; another set for the Creole type and a third set for other types. Bermuda onions may be purchased in three grades or purchased ungraded (unclassified). The grades are U.S. Nos 1 and 2 and U.S. combination 1 and 2. High quality fresh onions are well matured, which is indicated by firmness, dryness and a small neck, well shaped, and free from decay and other defects such as sprouting, sun scald, and evidences of injury. Avoid onions with wet or soft necks, which usually are immature or affected by decay.

The size of Bermuda onions must be specified in connection with the grade, except that if a size is not specified, it must conform to the standards for medium. Size classifications are as follows:

Small:	1 to 2-1/4 inches in diameter
Medium:	2 to 3-1/4 inches in diameter
Large:	3 inches or larger in diameter

Diameter is defined as the greatest dimension of an onion measured at right angles to a line running from the stem (neck or top) to the root (or bottom) of the bulb.

The quality characteristics for creole type onions are similar to those described for Bermuda onions. However, in creole onions, the size is part of the Grade as follows:

U.S. No. 1:	minimum of 1-3/4 inches in diameter
U.S. No. 2:	minimum of 1-1/2 inches in diameter

Onions other than the Bermuda and creole types intended for domestic characteristics for these types of onions are similar to those described for Bermuda onions. The sizes vary as follows:

U.S. No. 1:	The diameter cannot be less than 1-1/2."
U.S. No. 1 Boilers:	Not less than 1 inch nor more than 1-7/8 inch.
U.S. No. 1 Picklers:	The diameter cannot be more than 1".
U.S. Commercial:	The diameter cannot be less than 1-1/2" (same as U.S. No. 1).

If the size of onions are specified on the pack, the diameter should be as follows:

Small:	from 1 to 2-1/4 inches
Medium:	from 1-1/2 to 3-1/4 inches
Large or Jumbo:	3 inches or larger

Onions which are classified as "scallions" have thick necks and relatively small and poorly developed bulbs.

In some markets, fresh onions for cooking can be purchased pre-peeled and packed in film bags and ready for the stove. Onions packed in this manner should be inspected before cooking.

Fresh onions can be stored for from one to eight months, depending on the varieties. Globe varieties store much longer than Bermuda or Creole. For best results in the kitchen, hold onions at about 50°F at a relative humidity of 65-70 percent. However, onions can be held at higher humidities for short periods, especially if the air is forced-circulated. High humidities and poor ventilation cause onions to sprout and rot.

Do not store exposed onions with uncovered products such as milk, which absorbs odor. Potatoes and onions do not store well together when stacked closely in an area, i.e., mixed in a bin, because onions, which are dry, will draw moisture from the potatoes, which have a high moisture content.

When onions are removed from a cool area (35°F) they tend to sweat because of moisture condensation. This may cause decay. Therefore, use onions as soon as practical after removing from a cooler and avoid re-storing in a warm place.

When preparing onions for serving raw or for cooking, carefully trim and peel off the tough outer skins. The tougher underlayers can be used for flavoring cooked dishes. When boiling onions, cook only till the largest tubers are tender throughout.

FOOD FACTS

XI - PARSNIPS-FRESH

Parsnips are a low volume vegetable which resemble a carrot in shape but have a whitish cast and a flavor which is somewhat sweet. It is sometimes used by food service operators as a change-of-pace side dish vegetable. It is also used to garnish meat platters and in stews. Although nearly all parsnips purchased by food service operators are in fresh form, they are sometimes available in frozen form, particularly in mixed vegetables used for stews and other cooking purposes.

Fresh parsnips are available year round. However, those harvested in late winter usually have a sweeter flavor. Parsnips can be purchased by U.S. Grades No. 1 or 2. Higher quality parsnips have a small or medium diameter and are well formed, smooth, firm and free from serious blemishes or decay. Avoid large, coarse roots which have woody, fibrous or pithy centers and badly wilted or flabby roots, which may be tough when cooked.

Parsnips store well and may be held for two to three months if stored at 32°F and a relative humidity of 90 percent. In a restaurant, store under moist conditions in a refrigerator and use when needed. Parsnips are prepared and cooked in the same manner as carrots. Wash, trim and peel carefully. For use in side dishes, simmer until tender throughout.

FOOD FACTS

XI - PEAS-FRESH

The common garden pea, of which there are two general types, is one of the most widely used vegetables in North America. The type which is labeled "Early Peas" are produced from the Alaskan or other smooth skin varieties. The type commonly called "Sweet Peas" are derived from sweet, wrinkled varieties. There are many varieties of sweet peas. Some grow better in one region and others grow better in another. While some varieties are preferred for freezing, others are best suited for canning. Some varieties are used for drying.

Fresh peas are seldom used in food service establishments because of the labor required to shell them. High quality peas have fresh pods that are well filled with tender peas. When peas are over-mature, the pods are usually wrinkled, the green is faded, and the pods have a noticeably whitish or yellowish cast. The quality of fresh unshelled peas can be maintained for up to two weeks if stored at a temperature of 33°F and a relative humidity of 90 percent.

Potatoes are one of our most popular and versatile vegetables. They are available in several market forms including fresh, frozen, dehydrated, chipped, canned, or as prepared potato salad. Although in 1961, fresh potatoes commanded 75 percent of the total U.S. market, in 1982 the fresh share had diminished to 40 percent. Frozen, dehydrated and other processed forms have been growing steadily in popularity. Food service operators use fresh potatoes primarily for baking and processed potatoes (frozen, dehydrated, chipped and canned) for french frying, boiling mashing and making potato salad.

Most of our year-round supply of fresh potatoes is harvested in September or October and stored up to 9 months before shipment to retail outlets. A limited supply, however, is freshly harvested and marketed from January through September. These are called "new" potatoes. This term is also used to describe freshly dug Fall potatoes which are not quite fully mature.

Most harvesting is done by mechanical combines which dig the potatoes out of the ground and move them up vibrating conveyors, which eliminate the soil. Workers on the combines pick out any vines, stones or other debris. A few combines have built-in devices for removing debris.

Potatoes are usually brushed or washed at the packinghouse. Dirty potatoes are unattractive and the dirt contributes weight for which the buyer is paying. After cleaning, potatoes are mechanically sized and sorted into grades. Grades and sizes are often certified during packing by Federal-State inspectors. Packing is largely mechanized, and filled bags are check-weighed to ensure that they are slightly overweight, thus allowing for shrinkage in marketing.

Red potatoes and some white varieties are sometimes treated with colored or clear wax before shipment to improve their appearance. The FDA requires that potatoes so treated be plainly marked. Under the Federal Food, Drug and Cosmetic Act, it is illegal to color "white" skinned potatoes red or to use colored wax to make potatoes appear fresher or of better quality. Several producing states have banned all use of artificial color.

Types of Fresh Potatoes

Potatoes are classified according to their shape, skin color and use. Long varieties are typified by the Russel Burbank, White Rose and Early Glen. Other long varieties such as the Norgold Russet are becoming increasingly popular. Typical of the round varieties are the Irish Cobbler, Katahdin, Sebago, Kennebec, and Green Mountain. The Norland (round red) is currently in popularity.

The skin of fresh potatoes may be "white", red or russet. Russet potatoes have a brownish, rough, scaly skin. Potatoes of the foregoing shapes, sizes and color are used in restaurants for baking, boiling, or frying. Some types of potatoes, particularly the long varieties are grown specifically for their

baking qualities. "New" potatoes are best when boiled. The largest group of potatoes are those classified as "General Purpose." This group is made up of both long and round varieties and as the term implies are used for boiling, frying or baking.

Quality, Identity and Retention

The quality of fresh potatoes in the market place is determined principally by U.S. grades. The most popular grade is U.S. No. 1, although some restaurant operators might go a step beyond and purchase U.S. Extra (Grade) No. 1. These are premium potatoes which are sometimes skimmed off of the top of the pack and set aside. Potatoes which fall below U.S. No. 1 Grade are used for processing and are seldom purchased fresh by food service operators.

Potatoes are graded up or down, based on maturity, shape, cleanliness, freedom from freezing injury, and freedom from skin or internal damage caused by diseases, sunburn, ground water, growths, cracks, insects or worms, mechanical injuries or for other reasons. U.S. No. 1 Grade potatoes are reasonably mature and clean and reasonably free from defects.

Good quality potatoes are well shaped and smooth with few eyes. They are free from large cuts, growth cracks, bruises, skinned areas and decay. Some amount of skinning is normal in new potatoes, but avoid new potatoes with large skinned and discolored areas.

Do not buy potatoes that are green. Greening is caused by exposure to natural or artificial light. Sometimes only the skin is affected, but greening may penetrate the flesh. The green portions contain the alkaloid solanin which causes a bitter flavor and is said to be poisonous to some people. Also, avoid badly sprouted or shriveled potatoes, or potatoes with second growths. Irregular, knob-shaped growths are considered defects because they cause waste. If potatoes smell musty or moldy, the flavor may be affected.

It is impossible to detect internal defects without cutting a potato, but if you find that some of the potatoes you have bought are hollow in the center or have severe internal discoloration, return them to your supplier for replacement.

Another important aspect of purchasing potatoes is size. Potato packs which bear U.S. grades usually specify size. Also, variations in size are limited as follows:

<u>Size</u>	<u>Minimum</u>	<u>Maximum</u>
Small	1-3/4"	2-1/2" or 6 ounces
Medium	2-1/4" or 5 ounces	3-1/4" or 10 ounces
Large	3" or 10 ounces	4-1/4" or 16 ounces

If no size is designated:

1-7/8"

no maximum

FOOD FACTS

XI - POTATOES-FRESH

Fresh potatoes packed for the restaurant trade for baking are usually sold in 50 pound boxes and the size of the potatoes are designated by count. A box labeled "100", for example, will have 100 potatoes which average 8 ounces each. A box labeled "120" will have 120 potatoes which average 6-2/3 ounces each. Potatoes for baking can be purchased prewrapped in aluminum foil.

If stored properly, general purpose and baking potatoes will keep for several months; new potatoes will keep for several weeks. Look potatoes over before you store them. Set aside any that are bruised or cracked and use them first.

Handling and Care

Do not wash potatoes before you store them. As with most other fresh produce, dampness increases the likelihood of decay. Store them in a cool (45 to 50°F, if possible) dark place, with good ventilation. Potatoes stored at 70 to 80°F should be used within a week. Higher temperatures often causes sprouting and shriveling. Potatoes stored below 40°F for a week or more may develop a sweet taste because some of the starch changes to sugar. To improve their flavor, store them at a higher temperature for 1 to 2 weeks before using.

Except for tubers which are pre-wrapped, potatoes should be washed before cooking with skin on. Wrapped potatoes are washed before wrapping and the foil protects them from contamination. Whether or not you leave potatoes wrapped in foil or unwrapped is a matter of taste. When potatoes are baked in foil, they cook in their own steam and have a softer interior. However, wrapping prevents the skin from drying out. Some people prefer a firmer textured interior and a drier skin and therefore, baking without foil. Some food service operators remove the foil from baked potatoes before serving. This is done for two reasons: (1) the foil may be contaminated with dust, etc., and (2) the removal of the foil is considered to be a service to patrons. Operators who serve potatoes in foil should wash the foil before baking to remove dust, etc., which may accumulate during marketing and handling.

FOOD FACTS

XI - SQUASH-FRESH

There are two general types of squash: summer and winter. Both types are marketed fresh, frozen and canned. Summer squash includes such types as yellow crookneck, yellow straight neck and zucchini, which are normally sliced for cooking and serving. Each type of summer squash is available in one or more varieties.

Winter squash includes such types as Hubbard, Acorn, Butternut and other similar green varieties which are marketed fresh for fall and winter consumption.



Long Type
{slightly misshapen
and damaged}



Round Type
{Slightly misshapen}



Long Type
{Small growth
cracks}



Long Type
Hollow Heart

FOOD FACTS

XI - SQUASH-FRESH

Fresh squash can be purchased according to two U.S. Grades, Numbers 1 and 2. High quality summer squash are sold with a portion of the stem attached and are young and tender. They are also free from decay, bruises, scars or other surface injury. In young squash the seeds and seed cavity tissues are very immature and edible. High quality winter squash are marketed more mature than summer squash but are not so mature that they show discoloration and cracks.

Summer squash is quite perishable and quality can only be maintained for one or two weeks when stored at 33°F at a relative humidity of about 85 percent. Winter squash store very well. They can be held for 4 or 5 months when stored at 50°F and at a relative humidity of only about 70 percent.

FOOD FACTS

XI - SWEET POTATOES-FRESH

Boiled sweet potatoes are frequently served as a starch oriented side dish. They can also be served whole, baked or fried, sliced or Julienne style. Mashed sweet potatoes are sometimes used for making sweet potato pie.

Sweet potatoes are available in two types. One type is a yellow (or golden) moist, sweet tuber which is sometimes called a yam. (The true yam is a root of a tropical vine which is not grown commercially in the U.S.) Its counterpart is a potato which has a pale flesh and is lower in moisture and sweetness than the yellow type.

Sweet potatoes are widely available in fresh and canned forms. Some styles are available in frozen form and they can also be purchased in dehydrated form.

Fresh sweet potatoes are available year round, although they are not normally harvested in late spring and early summer. Sweet potatoes can be purchased in several U.S. Grades: Extra No. 1, No. 1, Commercial and No. 2. High quality sweet potatoes are firm, which means they are not in any way flabby or shriveled. They are also smooth, and fairly clean, fairly well shaped and practically free from damage, sprouts or cracks.

The size limitations for the various U.S. Grades are as follows:

	<u>Length</u>	<u>Max. Weight</u>	<u>Diameter</u>
Extra No. 1	3 - 9"	18 oz.	1-3/4 - 3-1/4"
No. 1	3 - 9"	20 oz.	1-3/4 - 3-1/2"
Commercial (a)	3 - 9"	20 oz.	1-3/4 - 3-1/2"
No. 2	NS	36 oz.	1-1/2 - NS

(a) differs from No. 1 only in an increased tolerance for defects.
NS - not specified.

FOOD FACTS

XI - SWEET POTATOES-FRESH

Sweet potatoes can be stored for as long as 4 to 6 months under ideal conditions of about 60°F and 80 percent relative humidity. The tubers are damaged by lower temperatures and higher relative humidities.

The safest way to handle sweet potatoes in a food service establishment is to treat them as if they were near the end of their storage life. This is particularly true of sweet potatoes which are received in the late spring and early summer. Store the tubers in a cool, semi-dry place, not in the refrigerator. Sweet potatoes bruise easily and if they have been mishandled in marketing the bruised spots might decay rapidly. Even if a decayed spot is cut away, the remainder of the potato flesh which looks normal may have a bad taste. Wet decay usually begins at the end of a sweet potato, making it discolored and shriveled. Dry decay occurs in the form of sunken, discolored spots in the sides of the potato.

FOOD FACTS

XI - TURNIPS AND RUTABAGAS

This section deals only with the roots of the turnip and rutabaga plants since the use of the leaves of the turnip plant is discussed in another subsection titled, "Greens". Although the roots of the turnip and rutabaga plants can be used interchangeably, the tops differ to a significant extent. Whereas the leaves of the turnip plant are commonly used as a "green", the leaves of the rutabaga plant are not normally used in this manner. Turnip and rutabaga roots are very similar in appearance. The flesh of most turnips is white and most rutabaga flesh is a light yellow. However, turnip and rutabaga flesh can be either white or yellow. Although turnips and rutabagas are available from a few sources as frozen or canned, they are mostly sold as fresh.

Fresh turnips are sold in bunches with tops on, or with short trimmed tops. Rutabagas, as well as turnips, are sold with tops removed to less than one inch or they can be purchased packed in film bags with the tops removed altogether. Turnips and rutabaga roots are sometimes waxed with a harmless paraffin to give the skin a shiny luster. Unless overdone, waxing protects the roots against wilting and excessive loss of moisture.

Fresh turnip and rutabaga roots can be purchased in accord with two U.S. grades: No. 1 and No. 2. Eating quality depends on their freshness. The roots may vary considerably in appearance, depending on the variety and the stage of development at which they are harvested. Quality is usually highest during the fall and winter and lowest during summer. Higher quality turnips and rutabagas are firm, fairly smooth, fairly clean and free from defects such as soft rot, cuts, cracks or discoloration. Larger roots measuring a minimum of 1-3/4 inches in diameter are preferred over smaller ones for flavor and ease of preparation.

Turnips and rutabagas have a storage life of 2 to 5 months depending on the variety. Unless held under moist conditions the roots will shrivel rapidly. Hold at 32°F with a relative humidity of 95 percent or more.

Turnips or rutabagas can be peeled and boiled whole, or sliced or diced and cooked. They can be served as a side dish, used to flavor stews or soups, or used to garnish meat platters. Also, they can be diced or cut julienne style and served raw in vegetable salads. When boiling turnips and rutabagas, the flavor can be enhanced by adding a small amount of sugar to the water.

FOOD FACTS

XI - FRESH FRUITS-BERRIES, MELONS & NUTS

The following portions of this text treat fruits, berries, melons and nuts which are used primarily in fresh form. Items which are used almost exclusively in frozen or canned form are omitted from this section. These items, as well as others are discussed under other sections of this text which deals with frozen and canned fruits, berries and melons.

Fresh melon is used in the food service trades as side dishes in salads and as garnishes. These items are therefore treated accordingly in this section.

Since nuts of all types are used extensively in the food service trades as garnishes, ingredients or snacks, these items are likewise discussed thoroughly in this manual.

FOOD FACTS

XI - APPLES-FRESH

Apples are available to restaurants in several different forms: fresh, frozen, canned and dried. Fresh apples are popular for use in Waldorm type salads and for baking. Frozen apple slices are used extensively for pies, cobblers, etc. Canned apples in the form of applesauce are widely used throughout the industry as a side dish. Canned apple slices (rings) are popular as garnishes for meat platters. They are often purchased spiced and dyed red or green. Dried (and dehydrated) apples in several types of cuts and styles are used for making pies and sauces.

There are many varieties of apples. Some tart varieties are preferred for making pies, sweet varieties are preferred for eating raw, and other varieties are well-known as baking apples. However, this is sometimes confusing because most apples can be considered as general purpose fruit, which can be used for cooking or eating fresh.

Fresh apples are available the year round because they have a long storage life in warehouses which utilize controlled atmospheres, and refrigeration to prolong their market span. However, supplies may be more plentiful during the fall, shortly after the harvest season ends in most growing areas.

The quality of fresh apples is largely related to the maturity of the fruit at the time it is picked. Apples that are picked too "green" lack flavor. During the harvesting process some green apples are often picked along with the mature ones and find their way into kitchens. Try to avoid purchasing fresh apples which have not reached their peak of maturity.

Fresh apples can be purchased in accord with several U.S. Grades: Extra Fancy, Fancy, No. 1, Utility and Combination Grades. One significant consideration of grade is color, in that a deep, pure color is an indication of quality. The color of an apple must be typical of the variety. Some varieties are dark red, other are "striped" red; some are yellowish golden, and others are light green. Apples are downgraded for being overripe, or for having bruises, injuries or discolored spots.

Some Common Uses of Popular
Varieties of Fresh Apples

VARIETY	EATING	SALADS & DESSERTS	PIES & SAUCES	BAKING	GENERAL PURPOSE
Delicious	X	X	--	--	--
McIntosh	X	X	--	X	X
Jonathan	X	X	--	--	X
Winesap	X	X	--	--	X
Stayman	X	--	--	X	X
Golden Delicious	X	X	--	--	X
Cortland	X	X	--	--	X
Yellow Newtown	--	X	--	--	X
Gravenstein	--	X	X	--	X
Baldwin	--	X	--	--	X
York Imperial	--	X	--	--	X
Wealthy	--	--	X	--	X
Dutchess	--	--	X	X	--
Rome Beauty	--	--	X	X	--
Grimes Golden	--	--	X	--	X
Rhode Isl. Greening	--	--	--	X	--
Northern Spy	--	--	--	--	X

FOOD FACTS

XI - APPLES-FRESH

Apples are graded and packed by size, which is often designated on the box by count or diameter. When purchased in a standard box, a pack of large apples will have a lower count than a pack of smaller apples. A popular box is one that holds approximately 40 pounds of apples, depending on the variety and size. A popular count is 125 per bushel.

Apples can be held at a food preparation site for several weeks without loss of quality if they are stored under refrigeration (32°-45°F). Apples stored at room temperature (70°F) will deteriorate 10 to 15 times faster than those held at 32°F. Apples which are served fresh in Waldorf salads or in other ways should be held under refrigeration prior to preparation, so that they will be chilled when served.

When preparing apples for salads or pies, be sure to remove all of the peeling and core, especially the carpel tissue which surrounds the core, and the dark particles from the blossom end of the apples. When preparing apples for baking, remove all of the core and adjacent areas, as well as the blossom end of the apple, but leave on the skin and leave the bottom of the apple intact to hold in the juices.

FOOD FACTS

XI - AVOCADOS

An avocado is a pear-shaped tropical fruit with a large pit which is usually eaten fresh. It is sometimes called an "Alligator Pear." They are used in vegetable salads and as "cups" for other mixes such as meat salads (chicken, turkey, shrimp, etc.). Avocados are available mainly in fresh form only, although it is possible from time to time to buy them frozen. Fresh avocados are available from California or Florida year-round.

There are two general types of avocados: the light green, thin skinned varieties and the Hass variety, which has a dark, thick, pebbly skin. Avocados are always hard when picked. They do not soften on the tree. Avocados slowly ripen during distribution and may not be "ready" ripe when they arrive at the kitchen in which case they should be held at room temperature (70°F) for several days. Once they are fully ripe, they should be stored at about 50°F, but never below 40°F. At temperatures below 40°, avocados suffer severe chill damage. In fact, when avocados are received they should be examined carefully for chill damage which may have occurred in transit. To determine if an avocado is ripe, squeeze it gently between the fingers. If it yields to gentle pressure, it is ready to eat. Some varieties may turn maroon, brown or purplish-black as they ripen.

The eating quality of avocados depends on their being "peak" ripe at the time of use. The purchasing quality of avocados can be judged in accord with four U.S. Grades: No. 1, No. 2, Combination No. 1 and No. 2, and No. 3. High quality avocados are well shaped, mature but not overripe, well formed and free of diseases and skin damage. Avocados are downgraded for chill injury, disease, or dark, sunken spots (black spot).

Packs of avocados should be of uniform size. The weight of the smallest fruit in a container should not be less than 75 percent of the weight of the largest fruit in the same container. The number of fruit, therefore, in a standard pack will depend on the size of the fruit provided they are tightly packed. The size of avocados, therefore, are often identified on the carton by count. All fruit in a carton should be of a similar variety.

To serve avocados, simply wash, peel and cut the fruit. Place cut pieces in lemon juice to prevent them from discoloring prior to serving.

Whole bananas may be eaten out-of-hand or used for garnishing cold salads, desserts, and cold cereals. They are used in puddings, breads, pies and cakes. Banana slices are sometimes cooked with ham or bacon or used in making fritters. They are nearly always purchased fresh, although it is possible to purchase bananas in dehydrated form for use in cooking.

Frozen banana puree is available, but this product is used almost exclusively in manufacturing products such as baby foods, ice cream, pies, cakes, etc.

Nearly all of the fresh bananas consumed in the United States come from Central America. They are picked green and are allowed to ripen during the marketing process. Ripening can be speeded up at wholesale houses by the use of temperature controlled "ripening" rooms. For the most part, a food service operator can order his bananas at a specified degree of ripeness, depending on when they are to be used. If they are to be used at once they should be ordered fully ripe. If they are to be used later, order them greener.

Unlike most other fruits (the avocado excepted), bananas develop their best eating qualities after they are harvested. Although harvested green, they are picked (or should be) only when they have reached their full size. Bananas which are overripe or bruised are much less desirable than full body, bright colored bananas which are reaching their peak of ripeness. The best eating quality is reached when the solid yellow color of the skin is speckled with brown. At this stage the flesh is yellow and the flavor is fully developed. The greener the banana the less flavor it has.

Bananas are sensitive to cool temperature and for this reason should be ripened at above 55°F. Bananas held at room temperature (70°F) will ripen faster than those held at 55°F. However, once bananas have reached their peak of ripeness, overripeness may be avoided by putting them in a refrigerator but only for a day or two. Although the skin may discolor, the flesh will retain its ripeness. To prevent banana slices from darkening, immerse them in lemon juice.

Fresh halved grapefruits are used as a cold breakfast appetizer or when heated under a broiler and topped with honey or brown sugar, they can be served as desserts. Chilled, frozen and canned grapefruit segments (sections) are available for appetizers, salads and desserts, and for garnishing other plates. They are sometimes packed with orange segments or other fruits and used as "fruits for salads."

Fresh grapefruits are most plentiful and at their best from January through May, however, they can be purchased year-round. Early season fruits are often tart and late season fruits are sometimes "pithy". The principal varieties are either seeded or seedless, white fleshed or pink fleshed.

Grapefruit can be purchased in accord with several U.S. grades, depending on the source. Florida grapefruit, which is the most plentiful, is graded U.S. Fancy, and No. 1 through No. 3. Since all producing areas take great pains to ship only tree-ripe fruit, green fruit is not a common quality problem in the marketing system.

The food service buyer is principally interested in grapefruit which is very juicy and "sweet". Therefore, look for fruit which has a thin skin, since these fruits are more juicy than thick skinned fruit. If a grapefruit is pointed at the stem end it is likely to be thick skinned. Rough, ridged, or wrinkled skin can also be an indication of thick skin, pulpiness and lack of juice. Avoid fruit which has noticeable skin defects at the stem end, or very soft spots anywhere on the peel. These fruits are likely to have objectionable flavors. Minor skin defects such as scale, limb rub scars, or discolored spots usually do not affect the eating quality of the fruit.

Grapefruit can be purchased in a wide range of sizes, which are not necessarily a factor of quality. Grapefruit sizes are usually shown on the box in terms of the number in a standard pack as follows:

DIAMETER IN INCHES*

<u>PACK</u>	<u>MINIMUM</u>	<u>MAXIMUM</u>
36's	5	5-9/16
45's or 46's	4-11/16	5-4/16
54's or 56's	4-6/16	4-15/16
64's	4-3/16	4-12/16
70's or 72's	3-15/16	4-8/16
80's	3-12/16	4-5/16
96's	3-9/16	4-2/16
112's	3-7/16	4
125's or 126's	3-5/16	3-14/16

*Measured around the middle, i.e., the greatest dimension measured at right angles to a line from stem to blossom end.

Always serve grapefruit halves well chilled and the flesh properly cut away from the rind. Fresh grapefruit can be stored for several weeks if held under refrigeration. A temperature of 50° is satisfactory. However, it is a good idea to hold them at 35°F overnight before serving so that they will be well chilled.

Chilled fresh grapefruit sections for food service use are packed in gallon jars and are ready for serving. Since these packs have not been sterilized by "heat", the product has to be held under refrigeration at all times, preferably at about 32°F. Although chilled grapefruit sections may be held for several weeks, it is a good practice to use the product within a week or 10 days.

High quality chilled grapefruit sections are plump and juicy, tightly packed with a minimum of broken or damaged sections, and have a good, bright color. They are packed from fresh grapefruits which are mature and the major portion of the membrane has been removed during packing. Each pack should be practically free of seeds and other noticeable defects.

Fresh table grapes are used primarily in North America as snack foods, on salad bars, or for decorations. Unfortunately, many shops do not yet see some of the opportunities which might occur from selling table grapes. Manufactured grape products such as jams, preserves and wines are used extensively in food service establishments. Canned grapes are sometimes used for making pastries and sauces. Frozen grapes, although available, are used mostly in manufacturing. Dried grapes, in the form of raisins, are used widely for preparing sauces and for baking.

Seedless grapes are by far the most popular. Fresh grapes are available in black (purple to black), red and white varieties. About 90 percent of the table grapes sold in the United States come from California. Most of these are of the European or Vinifera type, which are sold in accord with three U.S. Grades: Fancy, Extra No. 1 and No. 1. High quality fresh grapes are well developed, mature, well colored, firm and practically free of defects such as shattered or shriveled grapes, or berries which show decay. Size is an important factor in selecting high quality grapes, depending on the variety as follows: Ribier - 12/16", Cardinal - 12/16", Almeria - 9/16", Thompson Seedless - 7/16", Black Monukka - 7/16".

However, small grapes are becoming popular. These grapes are often available in petite bunches, packed about 150 bunches to the lug. They make good additions to preplanned meals and salad bars for just plain eating out-of-hand.

FOOD FACTS

XI - GRAPES

American or Eastern grapes can be purchased as U.S. Grades Fancy or No. 1. High quality American grapes have about the same characteristics as European grapes. Quality grapes should not be less than 9/16 of an inch in diameter.

FOOD FACTS

XI - LEMONS AND LIMES

Tart lemons and limes botanically are closely related; both belong to the citrus family. Although some varieties of lemons are sweet, they are of little value in North America. The lime originated in east Asia and is often referred to as the Persian lime. Some varieties are called Tahiti limes. The two fruits, however, differ in four noticeable respects: size, color, tartness, and juiciness. The lemon is slightly larger than the lime and is predominantly yellow in color as compared to the limes predominant green color. The lemon is also less tart and less juicy than the lime. Whereas, a quality lemon has a juice content of 30 percent as measured by volume, a quality lime has a juice content of about 42 percent by volume.

The juice of fresh lemons has a wide range of uses. It is used to flavor salad dressings, main course dishes such as seafood and to add to many kinds of sauces. Lemon wedges are served with numerous foods to allow patrons to "season to taste". Lemon wedges also serve as a garnish. Lime wedges are often served with melon (i.e., honeydew) slices.

Fresh lemons and limes are available year round and are very durable fruits. For these reasons, most of the lemon and lime juices used come from fresh fruit. However, the juices of the fruits, undiluted and unconcentrated, can be purchased in bottles (canned) and although available frozen, it is seldom used as a substitute for fresh juices except for beverages.

Fresh lemons and limes are available in U.S. Grades No. 1, No. 2 and combination of 1 and 2. High quality fruits are mature, which is indicated by a bright yellow in lemons and a bright green in limes. The two states (California and Arizona) which furnish nearly all of our lemons, have very strict regulations governing the harvesting and shipping of lemons, as well as other citrus fruits. These regulations help assure the shipment of only good quality fresh lemons.

Most lemons are harvested only when they reach 2-1/4 inches in diameter. They are picked green and ripen in curing houses where the temperature and humidity are closely controlled. Therefore, most lemons are shipped to market with a mature yellow color. If they are received with mixed color, that is, with some green showing, they may be held for a few days at room temperature (70°F) until full color is attained. Otherwise, hold lemons and limes under refrigeration, where the quality can be retained for weeks.

Once a lemon and lime is cut, it should be used promptly. The quality of these fruits are downgraded by bruises and decay. Once the fruit becomes softer than "fairly firm" it should be used immediately.

Lemons and limes are available in a short range of sizes, which are designated by the number of units in a standard pack. The smaller the count, the larger the fruit.

Juices of lemons and limes can also be purchased as partial substitutes for fresh juices. These products are available either in bottles or squeezable plastic containers. Lemon juice and lime juice are both available in U.S. Grades A and C. High quality juice has a good, bright color, a good flavor, and is practically free from such defects as excessive small seeds, fine pulp and light membranes. Quality is downgraded by browning caused by scorching, oxidation or poor storage conditions.

A large portion of the lemons harvested in the United States are processed into a powder (crystals) which is used in manufacturing many other products. This powdered product is the base for many carbonated soft drinks. Lemon powder, is not commonly used as a substitute for fresh lemon or bottled lemon juice.

There are two general classes of melons: muskmelons and watermelons. The term, muskmelon, can be used to identify several important varieties, including cantaloupes, Persian melons, and the so-called winter melons such as Honeydews, casabas, crenshaws, and Santa Clause. The cantaloupes and Persian melons develop a netted skin, and the winter melons have smooth or wrinkled skins. The flesh of these melons are green, white or orange-pink. Muskmelons are generally referred to only as melons, as contrasted to watermelons, which are normally called by their full names.

Watermelons can be purchased in various shapes, sizes and appearances. Some are round, others are oval, but most are oblong. Sizes normally range from 20 to 40 pounds, except for the bantam sizes which weigh only 5 to 10 pounds. Colors are dark green, mottled, striped, or light green. There are even seedless watermelons on the market.

Food service operators use melons (the muskmelon types) rather extensively for appetizers or desserts, or include the meat in salads. Melon halves are sometimes served with scoops of ice cream or cottage cheese placed in the cavity. Watermelon meats are also sometimes served in salads.

Melons and watermelons are most plentiful during the summer months, although they are imported in smaller quantities during the off-seasons from Mexico and other tropical areas.

Frozen melon balls are available for use in salads or for garnishing other dishes. Packs of frozen melon balls usually consist of an assorted variety of cantaloupes and honeydews of different colors which provide imposing dishes. Sometimes the melon balls are packed with other fruits in frozen or chilled packs.

Fresh cantaloupes can be purchased in accord with U.S. Grade Fancy, No. 1, Commercial or No. 2. Honeydews can be purchased in accord with U.S. Grades No. 1, Commercial, and No. 2. However, the main quality problem that the food service operator encounters is maturity. Most melons have to be picked before they reach full maturity. The reason for this is to make sure they reach their ultimate destination without being overripe. While this solves one problem, it creates another.

It is not unusual to receive melons which have not yet reached their peak of maturity, some not ripe enough to eat. A green melon or even one on the greenish side is quite remote in flavor and texture from a melon which is ripe and mellow. The best way to test a shipment of melons to see if they are ripe is to cut one. If the melons have not reached the peak of their ripeness when received, hold them at room temperature until they fully ripen. However, peak sweetness can only be attained if the melons were picked near maturity. Melons which were picked too green will not ripen properly.

The ripeness of some varieties of melons is indicated by their color, the softness around the stem end and their ripe odor. For example, when the honeydew is at its peak of sweetness and flavor, the rind is creamy yellow.

On the other hand, ripeness in cantaloupes is identified by a fairly strong, ripe odor, and well depressed scars at the stem end, which indicates that the melon came off the vine ready when picked.

Overmaturity is also a problem, as are bruises. Very soft, discolored (watery) spots are indications of a lack of quality. Once a melon has reached maturity, it can be held under refrigeration at about 40° and a relative humidity of 85 percent. Maturing can be retarded by wrapping the melons in a film before refrigerating. Melons should be washed before cutting, but never before storing. Most people prefer their melon served chilled.

Melons expire ethylene gas which can cause fresh green vegetables to turn brown. The aroma of melons can also influence the flavor of milk, cottage cheese, etc. To avoid these problems, do not store melons close to these products unless they are individually wrapped in film.

Fresh watermelon can be purchased in accord with three U.S. Grades: No. 1, Commercial and No. 2. As with other melons, the key to good quality in watermelon is maturity. Color is the best measurement of ripeness. A yellowish underside, regardless of the green color of the rest of the melon, is a good sign of ripeness. Symmetrical shape and a velvety dull blossom are other indications. A shiny surface is an indication of immaturity. In cut melon, a fresh, firm texture and a bright color are indications of good quality. Over-maturity is indicated by a softer, more textured flesh. Contrary to popular belief, "thumping" is not necessarily a reliable guide in determining the peak ripeness of a watermelon.

Several types of nuts are used in foods as snacks or garnishes, or for flavoring desserts, salads and sauces.¹ Although they can be purchased in the shell, it is much more popular to purchase nut meats already shelled. Nut meats are purchased in cans or film bags. High quality roasted nut meats have a well roasted appearance and flavor. Some of the more popular nuts are as follows:

Almonds - These are sweet nuts which resemble peach kernels. The meat is used for snacks and for flavoring salads and "Amandine" (Fr.) sauces. The meats are packed whole, slivered, sliced, or in pieces.

Almond varieties are classified as to whether they are bitter or sweet. Normally they are not mixed when packed, however, they can be purchased in mixed style. Whole almonds can be purchased by size as well as style. Sizes are stated in count per ounce. The range may vary by two or more nuts. The largest size is usually 16 to 18 per ounce and the smallest size is 50 or more.

Shelled almonds are available in a number of U.S. Grades: Fancy, Extra No. 1, No. 1, Select Shells Run, Standard Shells Run, No. 1 Whole and Broken, No. 1 Pieces, or Mixed Varieties. Top quality almonds are well dried, clean and free from injury. Moreover, units in a pack are of uniform size and shape.

Almonds in the shell are available in U.S. Grades No. 1 (one variety), No. 1 Mixed Varieties (two or more), No. 2 (one variety), and No. 2 Mixed. Sweet and bitter varieties can not be mixed in U.S. Grade 1. High quality almonds have a uniform, bright color, are practically free from discolored or broken shells and measure not less than 28/64 or an inch in thickness.

Brazil nuts are more popular for eating out-of-hand than for table service. Therefore, brazil nut meats are not commonly purchased by food service operators. Brazil nuts in the shell are dark brown and triangular shaped. They are called "Brazil" nuts because that is their principle country of origin. The meat of this nut is cream colored and is used mainly in mixed cocktail nuts, although it can be used for garnishes, desserts or salads. Brazil nuts in the shell can be purchased as U.S. Grade No. 1 and in various size ranges as follows:

<u>Size</u>	<u>Count Per Pound</u>
Extra Large	Not over 45
Large	Not over 50
Medium	Not over 65

High quality nuts are well cured and the meats are crisp and firm, not pliable or leathery, and the shells are clean and free of damage.

¹ FNS Regulations do not allow nuts eaten as a snack food to be counted toward meeting CN Meal Pattern Requirements.

Cashews are kidney shaped nuts (meats) which, in recent years, have become one of our most popular snack foods, particularly when packed in mixed nuts. Quality cashew nuts are well cured, uniform in size and practically free of broken units.

Chestnuts are small sweet nuts sometimes used in restaurants for flavoring dressings or candied sauces. They may be roasted, boiled or pureed. High quality chestnut meats are well cured and uniform in size. Chestnuts are not considered to be equal to other nuts with respect to protein.

The water chestnut, which is very popular in Oriental cooking, is not to be confused with the ordinary chestnut. Although this nut resembles the ordinary chestnut, it is the seed of the fruit of an aquatic plant.

Filbert nuts are also called hazel nuts, and have a fairly thick shell. The meats are sweet and are used in candies and pastries or for garnishing desserts and salads. Filberts in the shell are available in two types: round varieties and long varieties. They can be packed straight or mixed. Quality filberts are dry, well formed, clean and bright. They are available in U.S. Grade No. 1.

Mixed nuts can be purchased in the shell or as mixed nut meats. Mixed nuts in the shell, according to U.S. Standards, consist of almonds, brazils, filberts, pecans, and walnuts. There must be a minimum of 10 percent and a maximum of 40 percent of each nut. They can be purchased as U.S. Grades Extra Fancy, Fancy and Commercial. Mixed nuts in the shell are used for eating out-of-hand. Mixtures vary from one packer to another, but mainly they are packed with or without peanuts, or as "dry roasted" mixed nuts. They are also packed in pieces and used for topping ice creams, other desserts and pastries.

Peanuts - botanically, these are truly peas which look like nuts. They can be purchased roasted in the shell or shelled. Both types are mostly eaten out-of-hand as cocktail nuts.

Peanuts sold in the shell are usually Virginia type nuts which have been cleaned and roasted. They can be purchased by U.S. Grades Jumbo, Hand Picked or Fancy Hand Picked. Jumbo must have not more than 176 peanuts per pound. The range for Fancy is 176 to 225 per pound. High quality peanuts in the shell are mature and practically free from splits (pops) or extraneous material.

Shelled peanuts are available in two types: Runner or Virginia types and Spanish types. Spanish types are smaller, rounder and have a darker skin. They are available in U.S. Grades No. 1 and No. 2 or as splits. High quality nuts are large and plump, mature and well roasted. They are practically free from damage or extraneous material.

Pecans are popular because they grow well domestically. It is an olive-shaped nut with a smooth, thin skin. It has a wide variety of uses, but it is most popular as an ingredient in mixed cocktail nuts, as the main basis for pecan pies, to garnish desserts and fruit salads of various types, and as a

flavoring in pastries such as pecan rolls. Since the nut meats are readily available in halves and pieces, pecans are seldom purchased in the shell for table service.

Halves and pieces are available in a variety of sizes which are indicated by the number of units per pound or by diameters as follows:

Halves

Size Classification	No. of Halves Per Pound
Mammoth	250 or less
Junior Mammoth	251 - 300
Jumbo	301 - 350
Extra Large	351 - 450
Large	451 - 550
Medium	551 - 650
Small (Topper)	651 - 750
Midget	751 or more

Pieces

Size Classification	Diameter	
	Smallest	Largest
Mammoth	8/16"	no limit
Extra Large	7/16"	9/16"
Halves & Pieces	5/16"	no limit
Large	5/16"	8/16"
Medium	3/16"	6/16"
Small	2/16"	4/16"
Midget	1/16"	3/16"
Granule	1/16"	2/16"

Pecan halves and pieces can be purchased in U.S. Grades No. 1 or Commercial. High quality pecans have a light or light amber color, are well dried, well developed, and are practically free of any defects, damage or extraneous material such as pieces of shell. Quality of pecan meats is downgraded for having an amber or dark-amber color.

Pistachio Nuts: These are small nuts with a thin, hard shell. They are usually served in the shell and eaten out of hand. The meat has a light green tinge and an almond flavor. Ground nut meats are used to make pistachio ice cream.

Walnuts: Two types of walnuts are available to the food service trade. One type is commonly known as English (or Persian) walnuts and the other as black walnuts. English walnuts are used much more extensively because the meats are easily extracted from this type of nut. The meat is much more difficult to extract from the black walnut. However, black walnuts have a very distinct flavor and are the nut meat pieces which are frequently used for garnishing and flavoring ice cream sundaes and other desserts. Black walnut is the "fruit" of the tree by the same name, which is an excellent source of hard wood lumber.

English Walnuts can be purchased shelled or unshelled. The shelled nuts are purchased for eating out-of-hand and for decoration. Most restaurant operators purchase their English walnuts already shelled. The walnut meats are used for garnishing and flavoring many types of desserts and pastries. They are available as halves, pieces & halves, pieces, or small pieces. Quality English walnut meats have an extra light color. If the color is light amber or amber, the quality is downgraded. Quality nut meats are well dried, clean and free from shell (and partition) pieces and other defects. Walnut meat can be purchased as U.S. Grades No. 1 and Commercial.

English walnuts in the shell are purchased in sizes as follows:

<u>Size Description</u>	<u>Predominant Min. Diameter*</u>
Mammoth	96/64"
Jumbo	80/64"
Large	77/64"
Medium	77-73/64"
Standard	73/64"
Baby	60/64"

*With a 12 percent tolerance for each number.

These walnuts can be purchased in accord with U.S. Grades No. 1. No. 2 or No. 3. High quality English walnuts in the shell are bright, dry, clean, and practically free from discoloration, splits, and other damage.

Storage and Care:

Shelled nuts packed in cans or the proper film bags can be stored for about 2 years at room temperature. Unshelled nuts can only be held for about six months at room temperature and higher heat reduces the storage time of both types considerably. Once a container of shelled nuts has been opened, it should be completely resealed or the contents should be stored in the refrigerator to prevent infestation.

NOTE: FNS currently has a proposed regulation published that allows nuts and seeds to be used as meat alternates.

Orange segments are used in the preparation of fresh fruit salad and for garnishing other types of cold dishes. Although fresh oranges are used for this purpose in some instances, most food service operators prefer to use fruits which have already been segmented. Chilled orange segments packed in 1/2 and 1 gallon jars are a favorite with many managers. Canned orange segments, packed in No. 10 cans, are also available. Orange segments are also an integral part of most citrus salad packs. Although fresh oranges are used here and there for juicing, most establishments prefer to use frozen or chilled juices.

In addition to the more familiar domestic orange, there are three other types of oranges consumed in North America. One of these is the tangerine, which is a smaller flattened deep reddish colored orange with a sweet, spicy pulp and a thin, easily peeled rind. Another is the mandarin, which is a small bright red oriental orange with a loose skin. This orange is similar to the tangerine. A sizable quantity of canned mandarin orange segments are used in North America to add color and variety to fruit salads. A third type of "orange" is the tangelo, which is a hybrid of the tangerine and the grapefruit. This fruit is becoming more popular and is served as a substitute for either oranges or grapefruit.

Fresh oranges, although available year-round, are much more plentiful and often of better quality during the fall, winter and spring. Generally, there are two types of oranges: the eating orange and the juicing orange. Both can be used for sections. The Western Navel and the Florida temple varieties are typical of those considered to be good eating oranges. These varieties can be easily peeled and sectioned.

Although fresh oranges can be purchased in accord with several U.S. Grades, starting at the top with Fancy, the main way to identify good quality is to look for clean fruit that is thin skinned and solid and has a fresh appearance. Quality oranges are heavy and free of wrinkles, and watery breakdown. One may generally expect early fall fruit to be a little more tart than late winter fruit. Real late fruit is sometimes pulpy.

Oranges are required by strict state regulations to be well matured before being harvested and shipped out of the producing state. Thus, skin color is not a reliable index to quality and a greenish cast or green spots do not mean that the orange will turn greenish (regreening) late in the market season. Some oranges are artificially colored to improve the appearance of the fruits. This practice has no effect on eating quality but artificially colored fruits must be labeled "color added."

Russetting is often found on Florida and Texas oranges. This is a tan, brown or blackish mottling or speckling over the skin. It has no effect on eating quality and in fact, often occurs on oranges with thin skin and superior eating quality. Look for firm and heavy oranges, with fresh, bright looking skin which are reasonably smooth for the variety.

Oranges are available in various sizes which are usually identified by the number of oranges in a standard box. The larger the oranges, the lower the count, thusly:

Size	Diameter in Inches	
	Min.	Max.
100's	3-6/16	3-12/16
125's	3-3/16	3-9/16
163's	2-15/16	3-4/16
200's	2-11/16	
250's	2-8/16	2-12/16
325's	2-14/16	2-8/16

Fresh oranges must be stored under refrigeration and about 42°F is close to the best temperature to suit all varieties. Whereas, most Florida oranges store best at 32°F and a relative humidity of 90 percent, California and desert grown varieties do best at higher temperatures (40 - 48°F). However, for the week or two that fresh oranges will be held in most food preparation sites a temperature of around 42°F should be satisfactory. Except for the temple varieties, which store poorly (10 days), most other varieties can be stored from 1 to 3 months if held at the proper temperature for the variety.

When squeezing oranges for fresh juice, do not press them too hard or excessive oil will exude from the peel and distract from the natural flavor of the juice.

Fresh chilled orange segments are packed in liquids of various densities, usually just enough to protect the flavor of the product. High quality sections must come from high quality fruit. Quality sections are juicy and plump with a minimum of pulp and broken pieces. Canned broken mandarin sections can be purchased at discount prices. Orange sections can be purchased in various sizes and the number of sections per container may be noted by the packer. There are no current U.S. grades for chilled and canned orange segments.

Chilled orange segments, packed in glass jars, must be kept under refrigeration, preferably at about 32°F, at all times. Although chilled orange segments may be held for several weeks, it is a good practice to use the product within a week or 10 days. Before opening a jar of orange sections, place them in the refrigerator over-night so that the product will be thoroughly chilled for serving.

Fresh peaches are used sparingly in food service, since most operators prefer the frozen, canned or dried styles. Fresh peaches are not widely used in food service because they are highly seasonal and labor intensive to peel and prepare.

A great many varieties of peaches are grown but only an expert can distinguish one from another. These varieties fall into two general types: (1) Freestones (flesh readily separates from the pit) and (2) Clingstone (flesh clings tightly to the pit). Freestones are usually preferred for eating fresh or for freezing, while Clingstones are used primarily for canning, although they are sometimes sold fresh. Some varieties of freestones or semi-freestones are Elberta, J.H. Hall, Redhaven, Hiley and Jubilee. Some varieties of clingstones are Fortuna, Pelolo, Johnson, Guame and Sims.

The nectarine is thought of by some as a variety of peach, however, it is a more distant relative. Although similar to peaches in appearance and flavor, nectarines have firmer flesh and their skins have no down (fuzz). This fruit can be used as an alternative to fresh peaches and require the same care in handling.

Fresh peaches are available only from May through September, and then the supplies in June and late September are limited. However, they are widely grown throughout the United States and for that reason are readily available to most food service operators during the summer. Since peaches must be harvested ripe, but still firm, they bruise easily in shipment and, therefore, wide geographical production is a decided asset to the availability of good quality peaches in season.

When harvested, peaches intended for the fresh market are rapidly cooled to remove the field heat and are defuzzed (down removed) and sometimes waxed during the process. Supposedly, waxing increases the attractiveness of the peach and prolongs its market life by decreasing moisture loss.

Fresh peaches can be purchased in accord with U.S. Grades as follows: Fancy, Extra No. 1, No. 1 and No. 2. High quality fresh peaches, when ready to use, are fairly firm, but becoming a trifle soft; and the skin color between the red areas (ground color) is yellow or at least creamy. Firm or hard flesh peaches and those with a distinct green ground color should be set aside to ripen if they are to be eaten fresh. Peaches which are turning ripe but still slightly "green" can be used with fair results in making pies and cobblers.

Peaches are downgraded by small brown spots which depict signs of decay. Avoid over-ripe fruit which has become too soft and has lost its peak. A peach can be purchased in various sizes, which are indicated by the number in a standard pack or by listing the diameter range of the peaches in a box.

FOOD FACTS

XI - PEACHES-FRESH

Peaches can be stored for 2 or 3 weeks if held at temperatures of very close to 32°F and a relative humidity of about 90 percent. When stored at higher temperatures for long, some peaches tend to have internal breakdowns and develop rot. However, if peaches are to be held for less than a week, a temperature of 38°F may not be harmful. Handle fresh peaches carefully because they bruise easily and bruised fruit is an open invitation to rapid decay.

Before serving, it is necessary to sanitize peaches by washing them, after which they are peeled (most of the time), halved, pitted and sliced or otherwise cut for serving or cooking. Peaches intended for use in salads have to be kept chilled until ready to serve. Peach flesh will darken if held long (overnight) before serving or using. Darkening can be retarded by immersing the peaches in a solution of water and sugar or by coating them with lemon juice.

FOOD FACTS

XI - PEARS-FRESH

Because fresh pears are available year-round, they are often used in this form, particularly for salads, because fresh pears are nice and crisp. Canned pears are restaurant favorites because they are table ready. Although pears are available in frozen and dried forms, they are seldom purchased in these forms by food service operators.

Fresh pears are divided into two groups: (1) summer and fall, which are represented by such famous varieties as Bartlett and Hardy and (2) winter pears, which include such varieties as Anjou, Bosc, Comice, Winter Nelis, and Fleming Beauty. Although fresh pears are harvested only from August (or late July) through April, they can be stored up to four months, depending on maturity and storage conditions, thus making them available in fresh form year-round.

Fresh pears are often harvested prior to reaching maturity to minimize bruising during shipment. Under controlled storage conditions, pears ripen uniformly. The ripening can be controlled by lowering or raising the temperature. To ripen rapidly, store at room temperature (70°F). To minimize ripening, store at about 32°F.

Fresh pears can be purchased in accord with U.S. Grades No. 1 Extra and winter pears, No. 1, 2 and combination of 1 and 2. High quality pears at the peak of their goodness are fully ripe, not immature or over-ripe and are practically free from defects, particularly decay spots, which often occur on the stem end. Quality pears have a good, bright "ripe" color, which varies from one variety to another. Bartlett is a golden yellow when ripe, with a firm, lightly textured white flesh.

Anjou has a yellow-green skin, even when ripe. The flesh is creamy white and juicy. Bosc has a long tapering neck and a russet brown skin. It is a favorite for baking. The Winter Nelis is similar to the Bosc except smaller. It too, has excellent cooking qualities. The Comice variety has a yellow-green skin with a red blush. It is known as the Christmas pear because it packs well in gift boxes. Fresh pears are sized according to count per box and the count should be labeled on each box.

Often pears are not table-ripe on arrival. A good practice, therefore, is to order them well in advance so that they can be allowed to fully ripen before being used.

Pineapples are used mostly for salads and desserts. Sometimes they are used as ingredients in glazes and other sauces or for garnishing main courses. Whole, fresh pineapple are useful for decorating buffets. Most pineapple consumed in North America are brought in from the Philippines, Hawaii, (to a decreasing extent) Puerto Rico, and Mexico. Some are grown commercially in Florida and some are imported from Central and South America and Taiwan. The color, flavor and size of pineapple are influenced by where they are grown. Some of the more acidic varieties such as the Cayenne from Hawaii and the Philippines are popular for canning or freezing. The Bernambuco, which comes from Brazil, is less acidic and slightly larger than the Cayenne variety and is a good fruit for eating fresh or for purchasing as chill-packed.

Fresh pineapple can be purchased year-round, although they are more plentiful from April to June. The use of fresh pineapple in food service is limited because they are labor intensive to prepare and the frozen and canned are very good substitutes. However, when purchasing fresh pineapple, operators should seek fruit which is plump and fresh looking and as large as possible. The larger the fruit, the greater the proportion of edible flesh.

Since pineapples are not ripe when harvested, they may not be fully ripe when received. If not, they will ripen rapidly when set aside at room temperature for a few days. Do not serve pineapple before it has ripened. Fragrance is a good sign of ripeness. A very slight separation of the eyes (pips) indicates maturity, while over-maturity is indicated by slight decay at the base or elsewhere on the fruit. Most varieties turn from green to a golden or orange-yellow as they ripen. The exception to this rule of thumb is the Sugar-Loaf variety which remains green even when ripe.

Contrary to popular belief, the ease with which leaves at the top of the cavity can be pulled is not a reliable sign of quality, although the leaves should appear fresh and deep green. Likewise, thumping is of little value. To assure the quality level of pineapples, they can be purchased in accord with several U.S. Grades: Fancy, No. 1 and No. 2.

FOOD FACTS

XI - PINEAPPLE-FRESH

As with other tropical fruits, pineapples are subject to chill injuries and should not be stored for longer than a day or two at temperatures below 50°F. Ripe fruit is less susceptible to chill injury than green fruit.

FOOD FACTS

XI - STRAWBERRIES-FRESH

Strawberries, fresh and frozen, are excellent and versatile dessert items. They can be served as a side dish or used in pies, or as toppings for cakes and many other types of desserts. Strawberries are produced in a wide range of sizes, but size is not an indication of flavor. Strawberries are normally not canned except in the form of purees or preserves.

Fresh strawberries are fairly plentiful from April into July. During this period they are harvested in wide geographical areas. However, during the balance of the year, fresh strawberries are available from California, Florida or Mexico.

Strawberries are difficult fruits to handle because they spoil very easily. Unlike many other fruits, strawberries are nearly fully ripe at harvest. Deterioration comes from three sources: injuries, self-destruction and decay. The skin of the strawberry makes it vulnerable to spoilage by bruising and crushing. Moreover, strawberries have a high rate of metabolism (fast living) and will self-destruct within a short period of time, especially if they are not properly refrigerated or if they are injured.

Most shipping points now make special efforts to prolong the market life of the strawberry. They are handled with "kit gloves" to prevent injury while being harvested, pre-cooled immediately to remove the field heat and to slow metabolism, and carefully packaged in small baskets to minimize crushing and bruising.

Upon receiving fresh strawberries, inspect them promptly and remove any damaged fruit for immediate use. Store them at a temperature as close to 32°F as possible. Fruits held at 32°F may last twice as long as those stored at 50°F. A relative humidity of 90 percent is necessary to minimize moisture loss. Strawberries which are bright and fresh on arrival may be stored for a week under the proper conditions. But since this is risky, plan to use them within a few days.

Fresh strawberries can be purchased in accord with U.S. Grades No. 1, No. 2 or a combination of 1 and 2. Top quality berries have a rich color, are firm, juicy and sweet. Normally they should not be less than 3/4 inches in diameter and the caps should be attached and bright green. Berries are downgraded for damage and for over-ripeness or underdevelopment.

Contrary to popular belief, most produce is fairly shelf stable over a period of a week or 10 days if received in optimum condition and handled properly. Different products require different environments with respect to temperature and humidity. However, the reality is that many kitchens have only one cooler for everything. Some ideas which may be helpful are as follows:

- Tomatoes: Put ripe tomatoes directly into a cooler. Firm tomatoes (which are not ripe) should be packaged in polyethylene and left at room temperature until they start to turn soft, then refrigerate before serving. Work with your produce dealer to have tomatoes delivered at the proper degree of ripeness.
- Leafy Vegetables: Lettuce and other leafy vegetables, including root crops with leafy tops -- i.e., carrots and radishes -- love moist atmospheres. If these products are to be held for more than a few days you can put moist paper towels in or over the crates. Never wash or directly wet leafy vegetables until ready to use. Overwetting speeds decay. Bags of precut salad vegetables should never be opened prior to use and should be held at 2°F or in the coldest part of the refrigerator (near the coils).
- Potatoes, Fruits and Melons: Do not put potatoes in a refrigerator since the cold air may alter the structure of the starch. Most hard or medium-hard fruits and melons can be held at room temperature if firm (not fully ripe). Fruits and melons, however, should be refrigerated when they ripen and before serving. Strawberries have an unstable shelf life, but should be allowed to ripen prior to serving. This might require several days in a refrigerator or overnight at room temperature.
- Bananas: These items must be delivered by your supplier at the right degree of ripeness relative to when they are to be served. However, ripening can be accelerated by leaving bananas at room temperature. Although banana peelings turn dark when the fruit is refrigerated, the ripening process is slowed.

GROUP XII - PRODUCT SUPPORT INFORMATION

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United States
Department of
Agriculture

Agricultural
Marketing
Service

Washington, D.C.
20250

Institutional Meat Purchase Specifications

General Requirements

The United States Department of Agriculture (USDA) through its Agricultural Marketing Service (AMS) develops and maintains specifications for meat and meat products. These specifications contain nine documents collectively known as the Institutional Meat Purchase Specifications (IMPS). The documents are as follows:

General Requirements

Fresh Beef - - - - -	Series 100
Fresh Lamb and Mutton- - - - -	Series 200
Fresh Veal and Calf- - - - -	Series 300
Fresh Pork - - - - -	Series 400
Cured, Cured and Smoked, and Fully-Cooked Pork Products- -	Series 500
Cured, Dried and Smoked Beef Products - - - - -	Series 600
Edible By-Products - - - - -	Series 700
Sausage Products - - - - -	Series 800

These specifications are recommended for any meat and meat product procuring activity. For assurance that procured items comply with these detailed requirements herein, the USDA, through its Meat Grading and Certification Branch, provides a voluntary Meat Certification Service. Purchasers desiring this service should contact the U.S. Department of Agriculture, Agricultural Marketing Service, Livestock, Meat, Grain, and Seed Division, Meat Grading and Certification Branch, Washington, DC 20250.

Copies of the Institutional Meat Purchase Specifications are available from the U.S. Department of Agriculture, Agricultural Marketing Service, Livestock, Meat, Grain, and Seed Division, Meat Standardization and Review Branch, Washington, D.C. 20250.

EFFECTIVE October 1, 1982

ORDERING DATA

All meat and meat products shall originate from animals slaughtered in establishments regularly operated under the Meat and Poultry Inspection Operations (MPIO) regulations of the Food Safety and Inspection Service (FSIS) or under a system of meat inspection approved by FSIS. In addition, all finished product must be processed in an establishment which meets this requirement.

These General Requirements contain the optional ordering data pertaining to the:

- I. STATE OF REFRIGERATION
- II. PACKAGING AND PACKING
- III. CERTIFICATION

All other options are contained within the individual IMPS documents. In the front of each document are the general options available for the species or type of product specified within that document. Located within the individual item descriptions are the specific options available for each item. Ordering data shall be specified in the contract or purchase order and when certification is requested, made available to the AMS agent at time of final certification.

I. STATE OF REFRIGERATION

The purchaser shall specify the state of refrigeration:

- Option A. Chilled
- Option B. Frozen

If state of refrigeration is not specified, the product shall be delivered in the fresh chilled state. Product which has been previously frozen and thawed does not qualify for Option A. Chilled. When Option B. Frozen is specified, the contractor shall be responsible for delivering product in a solidly frozen state. The purchaser may specify the maximum length of time that products may be held in the freezer prior to shipping. Product failing to meet the following applicable temperature requirements shall cause rejection of the involved lot.

A. Chilled

Chilled products shall be maintained at an internal temperature of not less than 28°F (-2.2°C) or not higher than 50°F (10°C) on the day of initial certification. Temperature for chilled product to be held for 24 hours or more shall not exceed 40°F (4.4°C) at time of further processing. The use of dry ice is only permitted to maintain temperature of product to be ground. Contractors shall assure that all chilled products are stored in refrigerated rooms that are adequate to maintain excellent condition of the product until time of delivery.

B. Frozen

Products to be delivered frozen shall be initially certified in the fresh chilled state and placed in the freezer within 4 hours after: (1) final grinding, (2) final fabrication, or (3) upon completion of an end-item examination (i.e., frankfurters, bologna), as applicable. Ground patties shall be placed in the freezer within 5 hours after final grinding. At the time of final certification, frozen product shall have an internal temperature of 0°F (-17.8°C) or lower as determined by an examination of at least 1 shipping container or 1 piece from each production lot. However, in no case shall there be less than 3 shipping containers or pieces examined from each item or delivery unit.

Final acceptance of frozen product examined and certified in the chilled state shall be examined in accordance with USDA Meat Grading and Certification Branch Instructions. The finding of any product showing evidence of deterioration due to mishandling, thawing and refreezing, freezer burn, or obvious deviation from specification requirements shall cause rejection of the lot.

NOTE: When specified by the purchaser, product shall be frozen to an internal temperature of not higher than 10°F (-12.2°C) within 72 hours after placement into the freezer. To determine compliance with the 72-hour temperature requirement, the USDA meat grader shall randomly select 3 boxes from each production lot. Maximum temperatures lower than 10°F (-12.2°C) may be specified by the purchaser. Any individual sample box exceeding the maximum specified temperature shall cause rejection of the lot.

Time Limitations. Products shall be delivered no more than 4 days for fresh chilled and 7 days for frozen following date of final certification. When purchaser does not specify a maximum length of freezer storage, product may remain in the frozen state no longer than 150 days from the date of initial certification.

Issuance of Certificates. The original and up to 2 extra copies of all preliminary and final certificates shall be made available to the contractor. The contractor shall supply the purchaser with carbon copies of all final certificates. Preliminary and final certificates will be issued as described:

A. Products to be Delivered Chilled

The USDA meat grader will issue a final certificate upon completion of a finished product examination to cover all factors and details of the chilled product.

B. Products to be Delivered Frozen

The USDA meat grader will issue a preliminary certificate upon completion of a finished product examination to cover all factors and details prior to product freezing. The USDA meat grader will issue a final certificate to cover all factors and details of the frozen product prior to shipment.

C. Product to be Delivered Frozen When Final Certification is Performed in the Chilled State

The USDA meat grader will issue a final certificate upon completion of a finished product examination to cover all factors and details of the product prior to freezing. It will be the contractor's responsibility to assure the product is delivered frozen.

II. PACKAGING AND PACKING

The contractor shall assure that the materials used for packaging and packing comply with Meat and Poultry Inspection Operations regulations.

Packaging

- A. Carcasses, sides, quarters, and primal cuts or combinations thereof to be delivered frozen shall be: (1) bagged in a crinkled paperbag and 2 stockinettes, or (2) completely wrapped in plastic and 2 stockinettes, or (3) completely wrapped in plastic and boxed (see Packing) unless otherwise specified.

Carcasses, sides, quarters, and primal cuts or combinations thereof to be delivered chilled, need not be wrapped or boxed unless otherwise specified.

- B. Fabricated bone-in and boneless cuts; cured, smoked and dried meat; and edible by-products that are normally individually wrapped in commercial practice must be separately and completely wrapped with grease- and moisture-resistant paper or moisture-proof plastic.
- C. Ground and diced meat items shall be packaged in plastic bags or casings. Filled bags or casings shall have practically all air pockets forced out through the open end and shall be closed by metal clips, tying, or folding to completely cover the product. When closed by folding, the open end shall extend at least 6 inches (15.2cm) beyond the product and shall be folded over the packaged product.
- D. Patties shall be packed in boxes completely lined with plastic bags. The open end of the bag shall overlap at the top to cover the product (except when individual stacks are bagged). The patties shall be arranged in stacks and each patty within a stack shall be separated by waxed patty paper(s) (1 sheet waxed on both sides or 2 sheets when waxed on one side)

and the stacks shall be separated from each other by a full height divider. The divider shall be constructed from paperboard and treated to prevent adherence to the stacked patties. When the net weight of the patties and the immediate container is 10 pounds (4.5kg) or less, dividers are not required.

Patties which are individually quick frozen shall be packed in boxes completely lined with plastic bags. The open end shall overlap at the top to cover the product (except when individual stacks are bagged). The patties shall be: (1) packed in layers with a sheet of waxed paper or plastic material normally used for this purpose between layers, or (2) placed on waxed patty paper prior to freezing and may be subsequently stacked with or without dividers between stacks.

Individual stacks may be placed in a plastic bag of sufficient length to completely cover the product.

- E. Portion-cut products must be placed in boxes lined with plastic bags. The open end shall overlap at the top to cover the product. Layers of product shall be completely separated with waxed paper or plastic material normally used for this purpose.
- F. Unless otherwise specified in the purchase order, products such as frankfurters, sliced bacon, sliced dried beef, linked or bulk pork or breakfast sausage, etc., must be packaged and placed in immediate containers as illustrated in the following:
 - 1. Smoked and cooked linked sausage--1- or 2-pound (453.6g or 907.2g) retail-type individual packages or bulk packed in 5- to 10-pound (2.3kg to 4.5kg) containers. When specified by the purchaser, layers 1 link deep shall be separated with waxed paper or sheet of plastic material used for this purpose.
 - 2. Sliced bacon--1-pound (453.6g) retail-type individual packages or shingle or lay out packed with layers separated by waxed paper or sheet of plastic material used for this purpose.
 - 3. Sliced dried beef--Either 1/4-pound, 1/2-pound, or 1-pound (113.4g, 226.8g, or 453.6g) retail-type individual packages tightly packed to not more than 10 pounds (4.5kg) net weight per container. Alternatively, the product may be packed in a waxed or plastic-lined container not to exceed 10 pounds (4.5kg) net weight.
 - 4. Bulk pork or breakfast sausage--1-pound (453.6g) retail-type individual packages such as cello rolls or plastic bags packed not more than 10 pounds (4.5kg) net weight per container or in a waxed or plastic-lined container not to exceed 10 pounds (4.5kg) net weight.

5. Fresh linked sausage--1-pound (453.6g) retail-type individual packages or layer-packed 1 link deep with parchment or waxed paper separators between layers tightly packed to 5- to 10-pounds (2.3kg to 4.5kg) net weight.

Packing

Containers shall be of a size and shape normally used for the product and packed to full capacity without slack-filling or overfilling. Unless otherwise specified, containers shall not be packed in excess of 90 pounds (40.8kg) net weight. The minimum bursting strength of the fiberboard and the maximum net weight of the container shall comply with TABLE I.

Immediate containers used for packaging which meet the packing requirements may be used as shipping containers. Otherwise, immediate containers must be placed in a master container meeting the packing requirements except that part or whole shipments of not more than 5 packaged units may be shipped in their immediate containers.

The purchaser may specify weather-resistant containers. Fiberboard used in making these containers shall be as described in Federal Specification PPP-F-320. When specified, Type CF and SF, class weather-resistant boxes shall comply with TABLE I and be imprinted with the following data:

- (1) Boxmaker's name or boxmaker's certificate
- (2) Month and year of manufacture (e.g., 8/82)
- (3) Individual grade or identification symbols
- (4) Minimum average bursting strength, psi

NOTE: The AMS agent maintains the right to verify, using appropriate test procedures, that packing and packaging materials comply with these requirements.

Liver and cured product in pickle may be vacuum-packaged and placed directly into fiberboard boxes or put in plastic bags and then packed into fiberboard boxes completely lined with appropriate moisture-proof plastic bags, or they may be packed directly into fiber or metal drums. Drum interiors shall be protected by a wax or plastic coating or lined with a plastic-bag liner. When used, plastic bags and plastic-bag liners must be securely closed. Drums shall have full-opening tops with lock-rim closures which permit sealing by USDA and opening and reclosure by the purchaser.

TABLE I. REQUIREMENTS FOR FIBERBOARD

Net Weight of Shipping Container	Minimum Bursting Strength 1/	Minimum Weather-Resistant Grade (identification symbols)
40 pounds (18.1 kg) or less	175 psi	W6s, W6c
41 to 65 pounds (18.6-29.5 kg)	200 psi	W5s, W5c
66 to 90 pounds (29.9-40.8 kg)	275 psi	V3s, V4s, V3c

- 1/ Corrugated fiberboard (Type CF) and solid fiberboard (Type SF) class domestic boxes shall each bear a legible boxmaker's certificate signifying compliance with the Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable. The AMS agent shall use the boxmaker's certificate label to determine minimum bursting strength.

TABLE II. REQUIRED NUMBER OF STRAPS

Outside Length of Box (inches)	Number of Straps	
	Lengthwise ^{1/}	Girthwise ^{2/}
20" (50.8cm) or less	1	1
20" to 30" (50.8cm-76.2cm)	1	2
Over 30" (76.2cm)	1	3

- 1/ Two lengthwise straps shall be placed over the outer flaps on all regular slotted containers.
- 2/ The girthwise straps on telescope containers that have been assembled using the side tuck lock method shall be placed over the tuck lock areas. The girthwise straps on all other containers shall be placed to divide the box into units of approximate equal length.

CLOSURE

Fiberboard containers shall be securely closed using one or a combination of the following methods:

- (1) Strapping. Boxes may be strapped with pressure-sensitive adhesive, filament reinforced tape at least 0.5 inch (1/2 inch or 12.7 mm) wide or non-metallic strapping at least 0.3 inch (7.6mm) wide. The number of straps applied to each container shall comply with TABLE II.
- (2) Stapling. Staples shall be of sufficient number and distributed to securely close and prevent lifting of edges and corners of the outer flaps.
- (3) Gluing. The outer and inner flaps shall be firmly glued together over a sufficient area to securely close and prevent lifting of edges and corners of the outer flaps. Hot melt adhesive may be used instead of glue.

NOTE: When telescope containers are used, the final closure shall be in accordance with the above strapping method. When the strapping method is used for final closure of slotted containers, the initial closure shall be secured in accordance with the above gluing or stapling methods. However, if full overlap slotted containers are used, both the initial and final closure shall be secured in accordance with the above gluing or stapling methods.

SEALING

The immediate or shipping containers in which the products are packed must be sealed in accordance with USDA Meat Grading and Certification Branch Instructions.

NOTE: If a tape or strap specified for sealing also qualifies as a strapping material under "CLOSURE" it may be used as both a strap and the seal.

MARKING OF SHIPPING CONTAINERS

A. Containers Packed to More than 25 Pounds Net Weight

1. All marking materials must be flat, waterfast, non-smearing (take on fiber) and provide a definite contrast upon the surface of the container. The markings may be legibly stenciled, mechanically printed and/or applied with the use of mechanically printed label(s) on the container in lettering and numbers not less than .375 inch (3/8 inch or 9.5mm) high. When using labels they shall be applied to prevent their removal in intact form. The markings shall be located in the following sequence on one end of the container:
 - a. Upper left hand area. The true name of the product, "IMPS", and the product item description number.

- b. Upper right hand area. The date of initial certification by the USDA meat grader (month, day, and year). Lot number and box number when product is designated by lot (the numerical entry may be applied with a felt-tip pen, crayon, or pencil).
 - c. Lower left hand area. The applicable grade or selection (U.S. Prime, U.S. Choice, etc.), and Purchase Order (P.O.) Number. When product is prepared for stockpiling (not prepared under a purchase order) any deviations from specification requirements and all other applicable options such as weight range, formula, portion size, percent fat, fat thickness, etc. (When product is prepared for stockpiling the P.O. Number shall be entered at the time of final certification.)
 - d. Lower right hand area. The net weight of product (the numerical entry may be applied with a felt-tip pen, crayon, or pencil).
2. The following markings shall be located on the top of the container:
- a. The name and address of the receiver or buyer (not applicable to stockpile items).
 - b. For freezer stockpile items the marking shall read "FREEZER STOCKPILE."
 - c. For chilled stockpile items the marking shall read "CHILLED STOCKPILE." (Product certified according to a contract or purchase order shall not bear this marking.)
3. The name and address of the contractor and the supplier shall be located on either the side or top of the container.

B. Containers Packed to 25 Pounds or Less Net Weight

For such containers, no requirement regarding size of lettering and numbers is specified; however, they shall legibly bear the markings as indicated above.

III. CERTIFICATION

The local meat grading supervisor will determine the degree of supervision necessary to assure specification compliance. Examination and certification of any IMPS item shall be in accordance with Livestock, Meat, Grain, and Seed Division, Meat Grading and Certification Branch policies and procedures. However, examination and certification of products by the USDA does not relieve contractors of their responsibility to deliver a product complying with the requirements of all applicable documents. The contractor shall assure product compliance prior to submitting it to the AMS agent for any examination.

Contractors furnishing products under these specifications are expected to provide as much assistance as may be necessary to expedite the grading, examination, and certification of these products. The cost of all grading and certification services performed by the AMS agent involving examinations, supervision, official documentation, and related services (including samples and charges for chemical analyses, travel time, mileage, and per diem, when applicable) shall be borne by the contractor.

Examination for Condition of Containers. Shipping containers and immediate containers shall be examined in accordance with United States Standards for Condition of Food Containers. (Copies of the standards may be obtained from USDA, AMS, Food Quality Assurance Division, Washington, D.C. 20250.)

In lots that involve less than 50 shipping containers or less than 300 primary containers, the containers shall be examined individually. Using the defect criteria listed in the U.S. Standards for Conditions of Food Containers, any defective containers must be replaced or corrected, as applicable.

Net Weight Examination. If specified by the purchaser, packed product will be certified for net weight. This examination will be performed by randomly selecting and weighing a sample of 10 packed shipping units from each production lot. Net weight shall be determined by subtracting a tare weight from the gross weight. The tare weight shall be determined by weighing empty shipping containers and packaging materials of the same kind and in the same amount applicable to the 10 shipping containers weighed. The total net weight of the sample must be equal to or greater than the total of the marked net weights in the sample.

If the total net weight of the sample is less than the total marked net weights in the sample, the lot shall be rejected. Lots that are rejected may be reworked and submitted for reexamination (one time only). When examining resubmitted lots, a sample of 4 shipping units per lot shall be randomly selected and weighed. The finding of any shipping unit in the resubmitted lot which is less than the marked net weight shall cause rejection of the lot.

NOTE: Scales shall be certified in accordance with Meat Grading and Certification Branch Instructions.

Destination Inspection. Final acceptance of all products will be by the consignee at the point of delivery. Consignee shall reject: (1) products that are not identified with the appropriate "USDA Accepted as Specified" stamp, or (2) products that are appropriately identified with that stamp but which have other obvious, major deviations from specification requirements. Products certified by the USDA but which, in the opinion of the consignee, have deviations from the specification requirements which do not materially affect the usability of the product, may be tentatively accepted subject to verification of such deviations by local USDA meat grading personnel. All deviations from the specification noted at the point of delivery must be reported promptly to local USDA meat grading personnel who are instructed to investigate all such reports without delay.

Waivers and Amendments to Specification Requirements. In the interest of competitive bidding, the issuance of waivers is discouraged. However, waivers of a few specification requirements may be authorized provided: (1) the change can be indicated clearly and can be readily applied, (2) there is an agreement between the purchaser and contractor on the change, (3) the purchaser furnishes the AMS agent who is to perform the examination and certification of the product with a written statement indicating the precise nature of the changes, and (4) such changes comply with all MPIO regulations.

Examples of waivers that may be made:

- A. Substitution of weight ranges for those specified
- B. Substitution of grade of meat for that specified
- C. Modification of fat content in ground or diced meat
- D. Substitution or slight variations in sausage formulas
- E. Modification of container requirements

Changes involving rephrasing of detailed specification requirements must be considered as an amendment to the specification and will be effective only after such changes have been submitted and approved by the Meat Standardization and Review Branch of the Livestock, Meat, Grain, and Seed Division, AMS, USDA.

Condition of Product at Time of Delivery. Contractors shall assure that refrigerated trucks are used to protect products during transport and that these trucks comply with MPIO regulations. At destination all products shall be in compliance with applicable specifications and will be reexamined by the consignee for cleanliness and soundness.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Livestock, Meat, Grain, and Seed Division
Washington, D.C.

November 1982

AMENDMENT NO. 1

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR GENERAL
REQUIREMENTS APPROVED BY USDA EFFECTIVE OCTOBER 1982

This amend is issued to modify the CLOSURE section.

Page 9, CLOSURE, Strapping paragraph, line 3, delete "...0.3
inch (7.6 mm)...." and substitute "0.25 inch (1/4 inch or
6.3 mm)".

NOTE Paragraph, delete sentence 2.

Sentence 3, delete "...However, if...." and substitute
"When".

This amendment is effective December 20, 1982.

Thomas H. Porter, Director
Livestock, Meat, Grain, and Seed
Division

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS
FOR FRESH BEEF
APPROVED BY USDA

These specifications contain descriptions of various fresh beef products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs these specifications must be used with "Institutional Meat Purchase Specifications General Requirements," which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Lamb and Mutton; Fresh Veal and Calf; Fresh Pork; Cured, Cured and Smoked, and Fully-Cooked Pork Products; Cured, Dried, and Smoked Beef Products; Edible By-Products; and Sausage Products. Copies of specifications for these products may be purchased from the Superintendent of Documents.

UNITED STATES DEPARTMENT OF AGRICULTURE

**Agricultural Marketing Service
Livestock Division
Washington, D.C.**

Effective January 1976

ORDERING DATA: TO BE SPECIFIED BY PURCHASER

GRADE

Carcasses, Sides or Quarters - The purchaser must specify a quality grade and a yield grade.

Cuts and Roasts - The purchaser must specify a quality grade and may also specify a yield grade.

Portion Cuts and Diced Beef - The purchaser must specify a quality grade.

Ground Beef - The purchaser must specify a quality grade for Items 137 and 1137. However, a quality grade shall not be specified for other ground beef items.

The upper half or lower half of a quality grade may be specified, otherwise the full range of the grade is acceptable.

When yield grade is specified for forequarters or forequarter cuts, any such item may not be derived from a carcass or side which was yield graded after the removal of more than minor amount of kidney and pelvic fat.

Yield Grade 1 through 5 are applicable to all quality grades. However, those yield grades indicated by an "X" are in the largest supply.

USDA GRADES

Quality Grades	Yield Grades ¹				
	1	2	3	4	5
U.S. Prime			X	X	X
U.S. Choice		X	X	X	
U.S. Good		X	X		
U.S. Standard	X	X	X		
U.S. Commercial		X	X	X	X
U.S. Utility		X	X	X	
U.S. Cutter		X	X		
U.S. Canner		X	X		

¹The yield grades reflect differences in yields of boneless, closely trimmed, retail cuts. As such, they also reflect differences in the overall fatness of carcasses and cuts. Yield Grade 1 represents the highest yield of retail cuts and the least amount of fat trim. Yield Grade 5 represents the lowest yield of retail cuts and the highest amount of fat trim.

If desired, Bullock beef may be specified by the purchaser.

WEIGHT RANGE OR SIZE

Carcasses, Sides, Quarters, and Cuts: See weight range table.

Roasts: See weight range table. If desired, purchasers may specify that roasts be further reduced in size.

Ground Beef Patties: Either the individual patty weight or the number of patties per pound must be specified.

Ground Beef Patty Weight Tolerances

For patties with a specified weight of 3 ounces or less, a tolerance of ± 2 patties from the projected number in a 10-pound unit will be permitted. For patties with a specified weight of more than 3 ounces a tolerance of ± 1 patty from the projected number in a 10-pound unit will be permitted. (When patties are specified by a number per pound, this shall be converted to patty weight to determine tolerances, i.e., 6 to the pound = 2.67 ozs.) For example:

Specified Size		Number Per 10-Pound Unit	Tolerances (over and under)
Weight	No. Per Pound		
1.6 oz.	10	100	2
2.0 oz.	8	80	2
3.2 oz.	5	50	1
4.0 oz.	4	40	1

Example: When 2 ounce patties are specified, 10-pound units containing 78-82 patties are acceptable.

Portion Cut Items: Either the portion weight or thickness desired—*not both*—must be specified. If weight is specified, see the weight range tables. If thickness is specified, the actual thickness desired must be indicated. (Not applicable to cubed steaks.) Also, in order to control uniformity of portion sizes, the weight range of the IMPS cut from which the portions are to be produced may also be specified. In this case, the fat thickness of the referenced IMPS cut should be the fat thickness specified for the portion cut.

Portion Cut Weight Tolerances:

If portion weight is specified, the following tolerances will be permitted.

Weight Specified	Tolerances (over and under)
less than 6 ozs.	1/4 oz.
6 ozs. but less than 12 ozs.	1/2 oz.
12 ozs. but less than 18 ozs.	3/4 oz.
18 ozs. or more	1 oz.

Example: When 8 ounce steaks are specified, individual steaks weighing 7-1/2 to 8-1/2 ounces are acceptable.

Portion Cut Tolerances:

If thickness is specified, the following tolerances will be permitted.

Thickness Specified	Tolerances (over and under)
1 inch or less	3/16 inch
More than 1 inch	1/4 inch

Example: When 1-1/4 inch steaks are specified, individual steaks measuring 1 to 1-1/2 inches are acceptable.

FAT LIMITATIONS

Cuts and Roasts: Except when yield grade is specified, the purchaser must specify one of the following maximum average thicknesses of surface fat unless definite fat limitations are indicated in the detailed specifications.

Maximum Average Thickness	Maximum At Any One Point
1 inch	1-1/4 inches
3/4 inch	1 inch
1/2 inch	3/4 inch
1/4 inch	1/2 inch

NOTE: When average fat thicknesses are specified in item descriptions, the appropriate "Maximum At Any One Point" limitations shall apply.

Steaks: Unless otherwise specified by the purchaser, or unless definite fat limitations are indicated in the detailed item specifications, on surfaces where fat is present, the fat must not exceed an average of 1/2 inch in thickness and the thickness at any one point must be not more than 3/4 inch.

Chops, Cutlets, and Filets: Unless otherwise specified by the purchaser, surface fat, where present, must not exceed an average of 1/4 inch in thickness and the thickness at any one point must be not more than 3/8 inch.

NOTE: Defatting must be done by smoothly removing the fat by following the contour of the underlying muscle surface. Beveling of the edges, only, is not acceptable. In determining the average thickness of fat at any point on steaks and roasts which have an evident, natural depression into the lean, only the fat above the portion of the depression which is more than 3/4 inch in width will be considered.

STATE OF REFRIGERATION

- A. Chilled
- B. Frozen

TYING:

When tying is required, roasts must be made firm and compact and held intact by individual loops of strong twine uniformly spaced at approximately 2-inch intervals girthwise. In

addition, some roasts may require tying lengthwise. In lieu of string tying, it is permissible to enclose roasts in a stretchable netting or by any other equivalent method. Purchasers may specify that roasts be tied when this requirement is not specified in the detailed item specification

AGED BEEF:

The purchaser may specify aged beef. Unless otherwise specified, bone-in cuts may be dry aged or aged in plastic bags. Boneless cuts must be aged in plastic bags. Meat which is dry aged must be trimmed to remove meat which is dry and discolored and/or which has an odor foreign to fresh beef. When examining beef for compliance with these specifications, USDA meat graders will take into consideration the normal deviation of color present in aged meat from that normally associated with fresh-chilled meat.

MATERIAL:

Beef products described in these specifications must be derived from beef carcasses or wholesale cuts. Cuts which have been excessively trimmed in order to meet specified weights, or which do not meet the specification requirements for any reason, are excluded. The beef shall be of good color normal to the grade, be practically free of bruises, blood clots, bone dust, ragged edges, and discoloration. The spinal cord, thymus glands, and heart fat must be removed. Except as otherwise provided herein, the meat shall show no evidence of freezing, or defrosting. Also, the product shall show no evidence of mishandling and shall be in excellent condition to the time of delivery.

Portion cut items to be delivered frozen may be produced from frozen meat cuts which have been previously accepted in the fresh-chilled state provided such cuts are in excellent condition and in their original shape. Products thus produced shall be packaged, packed, and promptly returned to the freezer.

CUTTING STEAKS

Unless otherwise specified in the individual item specification, steaks must be cut in full slices in a straight line reasonably perpendicular to the outer surface and at an approximate right angle to the length of the meat cut from which steaks are produced. Butterfly steaks are not acceptable.

BONING

Boning shall be accomplished with sufficient care to allow each cut to retain its identity and to avoid objectionable scores in the meat.

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Range A	Range B	Range C	Range D
		Pounds	Pounds	Pounds	Pounds
100	Carcass	500-600	600-700	700-800	800-up
101	Side	250-300	300-350	350-400	400-up
102	Forequarter	131-157	157-183	183-210	210-up
102A	Forequarter, Boneless	104-125	125-146	146-168	168-up
103	Rib, Primal	24-28	28-33	33-38	38-up
107	Rib, Oven-Prepared	17-19	19-23	23-26	26-up
108	Rib, Oven-Prepared, Boneless & Tied	13-16	16-19	19-22	22-up
109	Rib, Roast-Ready	14-16	16-19	19-22	22-up
109A	Rib, Roast-Ready, Special	14-16	16-19	19-22	22-up
109B	Blade Meat	Over-3			
110	Rib, Roast-Ready, Boneless & Tied	11-13	13-16	16-19	19-up
111	Spencer Roll	10-12	12-15	15-17	17-up
112	Ribeye Roll	5-6	6-8	8-10	10-up
112A	Ribeye Roll, Lip-On	6-7	7-9	9-11	11-up
113	Square-Cut Chuck	66-79	79-93	93-106	106-up
114	Shoulder Clod	13-15	15-18	18-21	21-up
114A	Shoulder Clod Roast	Under-15	15-18	18-21	21-up
115	Square-Cut Chuck, Boneless	54-65	65-77	77-88	88-up
116	Square-Cut Chuck, Boneless, Clod Out	40-48	48-57	57-65	65-up
116A	Chuck Roll	13-15	15-18	18-21	21-up
117	Foreshank	7-8	8-10	10-12	12-up
118	Brisket	12-14	14-17	17-20	20-up
119	Brisket, Boneless, Deckle On	9-10	10-12	12-14	14-up
120	Brisket, Boneless, Deckle Off	6-8	8-10	10-12	12-up
121	Short Plate	20-27	27-31	31-35	35-up
121A	Short Plate, Boneless	16-23	23-27	27-31	31-up
122	Full Plate	28-37	37-44	44-51	51-up
122A	Full Plate, Boneless	21-27	27-29	29-32	32-up
123	Short Ribs	2-3	3-4	4-5	5-up
123A	Short Ribs, Short Plate	Amount as Specified			
123B	Short Ribs, Special	Amount as Specified			
129	Armbone Chuck	77-88	88-103	103-118	118-up
126	Armbone Chuck, Boneless	59-70	70-82	82-90	90-up
126A	Armbone Chuck, Boneless, Clod Out	46-57	57-69	69-77	77-up
127	Cross-Cut Chuck	86-103	103-120	120-138	138-up
128	Cross-Cut Chuck, Boneless	68-81	81-95	95-109	109-up
132	Triangle	107-129	129-150	150-172	172-up
133	Triangle, Boneless	83-101	101-117	117-134	134-up
134	Beef Bones	Amount as Specified			
135	Diced Beef	Amount as Specified			
135A	Beef for Stewing	Amount as Specified			
136	Ground Beef, Regular	Amount as Specified			
136A	Ground Beef, Regular, TVP Added	Amount as Specified			
137	Ground Beef, Special	Amount as Specified			

NOTE: The weight ranges of cuts as shown in these tables do not necessarily reflect any relation to the carcass weight ranges. Studies have shown that all carcasses within a given weight range will not produce cuts that are uniform in weight. Therefore, in ordering cuts, purchasing officials should specify the weight range(s) desired without regard to the carcass weights shown in the various ranges.

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE—Continued

Item No.	Product	Range A	Range B	Range C	Range D
		Pounds	Pounds	Pounds	Pounds
155	Hindquarter	119-143	143-167	167-190	190-up
155A	Hindquarter, Boneless	90-108	108-126	126-143	143-up
158	Round, Primal	59-71	71-83	83-95	95-up
159	Round, Boneless	44-53	53-62	62-71	71-up
160	Round, Shank Off, Partially Boneless	47-57	57-67	67-76	76-up
161	Round, Shank Off, Boneless	44-53	53-62	62-71	71-up
163	Round, Shank Off, 3-Way, Boneless	41-50	50-58	58-66	66-up
164	Round, Rump & Shank Off	40-48	48-56	56-64	64-up
165	Round, Rump & Shank Off, Boneless	35-43	43-50	50-57	57-up
165A	Round, Rump & Shank Off, Boneless, Special	38-46	46-54	54-60	60-up
165B	Round, Rump & Shank Off, Boneless, Tied, Special	38-46	46-54	54-60	60-up
166	Round, Rump & Shank Off, Boneless, Tied	35-43	43-50	50-57	57-up
166A	Round, Rump Partially Removed, Shank Off	44-52	52-61	61-70	70-up
167	Knuckle	8-9	9-11	11-13	13-up
167A	Knuckle, Trimmed	8-9	9-11	11-13	13-up
168	Top (Inside) Round	14-17	17-20	20-23	23-up
170	Bottom (Gooseneck) Round	18-21	21-25	25-29	29-up
170A	Bottom (Gooseneck) Round, Heel Out	17-20	20-24	24-28	28-up
171	Bottom (Gooseneck) Round, Untrimmed	18-21	21-25	25-29	29-up
171A	Bottom (Gooseneck) Round, Untrimmed, Heel Out	17-20	20-24	24-28	28-up
171B	Outside Round	8-10	10-13	13-16	16-up
171C	Eye of Round	Under-3	3-5	5-up	
172	Full Loin, Trimmed	35-42	42-50	50-57	57-up
173	Short Loin	17-21	21-25	25-28	28-up
174	Short Loin, Short Cut	14-19	19-23	23-26	26-up
175	Strip Loin	11-13	13-16	16-19	19-up
176	Strip Loin, Boneless	8-10	10-12	12-14	14-up
177	Strip Loin, Intermediate	10-12	12-14	14-16	16-up
178	Strip Loin, Intermediate, Boneless	8-9	9-11	11-13	13-up
179	Strip Loin, Short Cut	8-10	10-12	12-14	14-up
180	Strip Loin, Short Cut, Boneless	7-8	8-10	10-12	12-up
181	Sirloin	16-19	19-24	24-28	28-up
182	Sirloin Butt, Boneless	11-14	14-16	16-19	19-up
183	Sirloin Butt, Trimmed	9-10	10-13	13-15	15-up
184	Top Sirloin Butt	6-7	7-9	9-11	11-up
185	Bottom Sirloin Butt	4-5	5-6	6-7	7-up
185A	Bottom Sirloin, Flap	1-3	3-up		
185B	Bottom Sirloin, Ball Tip	1.5-3	3-up		
185C	Bottom Sirloin, Triangle	1.5-3	3-up		
185D	Bottom Sirloin, Triangle, Defatted	1.5-3	3-up		
186	Bottom Sirloin Butt, Trimmed	2-3	3-4	4-5	5-up
189	Full Tenderloin	4-5	5-6	6-7	7-up
189A	Full Tenderloin, Defatted	3-4	4-5	5-6	6-up
190	Full Tenderloin, Special	2-3	3-4	4-up	
190A	Full Tenderloin, Skinned	2-3	3-4	4-up	
191	Butt Tenderloin	1-2	2-3	3-4	4-up
192	Short Tenderloin	2-3	3-4	4-up	
193	Flank Steak	Under-1	1-2	2-up	

INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Portion Size										
		3	4	6	8	10	12	14	16	18	20	24
		OZS.	OZS.	OZS.	OZS.	OZS.	OZS.	OZS.	OZS.	OZS.	OZS.	OZS.
1100	Cubed Steaks	X	X	X	X							
1101	Cubed Steaks, Special	X	X	X	X							
1102	Braising Steaks, Swiss		X	X	X							
1103	Rib Steaks				X	X	X	X	X	X		
1103A	Rib Steaks, Boneless		X	X	X	X	X					
1112	Rib Eye Roll Steaks		X	X	X	X	X					
1112A	Rib Eye Roll, Lip-On, Steaks		X	X	X	X	X					
1136	Ground Beef Patties, Regular	Size as Specified										
1136A	Ground Beef Patties, Regular, TVP Added	Size as Specified										
1137	Ground Beef Patties, Special	Size as Specified										
1167	Knuckle Steaks	X	X	X	X	X						
1168	Top (Inside) Round Steaks	X	X	X	X	X	X					
1170	Bottom (Gooseneck) Round Steaks	X	X	X	X	X	X	X	X	X	X	X
1173	Porterhouse Steaks					X	X					
1173A	Porterhouse Steaks, Intermediate					X	X	X	X	X	X	X
1173B	Porterhouse Steaks, Short Cut					X	X	X	X	X	X	X
1174	T-Bone Steaks				X	X	X	X	X	X	X	X
1174A	T-Bone Steaks, Intermediate				X	X	X	X	X	X	X	X
1174B	T-Bone Steaks, Short Cut				X	X	X	X	X	X	X	X
1177	Strip Loin Steaks, Bone-In, Intermediate			X	X	X	X	X	X	X	X	
1178	Strip Loin Steaks, Boneless, Intermediate				X	X	X	X	X	X	X	X
1179	Strip Loin Steaks, Bone-In, Short Cut				X	X	X	X	X	X	X	X
1179A	Strip Loin Steaks, Bone-In, Extra Short Cut				X	X	X	X	X	X	X	X
1179B	Strip Loin Steaks, Bone-In, Special				X	X	X	X	X	X	X	X
1180	Strip Loin Steaks, Boneless, Short Cut			X	X	X	X	X	X	X	X	
1180A	Strip Loin Steaks, Boneless, Extra Short Cut		X	X	X	X	X	X	X	X		
1180B	Strip Loin Steaks, Boneless, Special			X	X	X	X	X	X	X	X	
1184	Top Sirloin Butt Steaks		X	X	X	X	X	X	X	X	X	X
1184A	Top Sirloin Butt Steaks, Semi-Center Cut		X	X	X	X	X	X	X			
1184B	Top Sirloin Butt Steaks, Center Cut		X	X	X	X	X	X	X			
1189	Tenderloin Steaks		X	X	X	X	X	X				
1189A	Tenderloin Steaks, Defatted	X	X	X	X	X	X	X				
1190	Tenderloin Steaks, Special ..	X	X	X	X	X	X	X				
1190A	Tenderloin Steaks, Skinned	X	X	X	X	X	X	X				

NOTE: Because it is impractical to list all portion weights that purchasers may desire, those identified by the letter "X" are suggested only. Other portion weights may be specified if desired.

DETAILED REQUIREMENTS

Item No. 100 - Carcass—A beef carcass is the four quarters from a single carcass. The quarters are produced by separating the forequarters from the hindquarters by cutting between the 12th and 13th ribs, the 13th rib remaining with the hindquarter. The diaphragm may be removed, but if not removed, the membranous portion shall be removed close to the lean. The thymus gland and heart fat shall be closely removed.

Item No. 101 - Side—The side consists of one matched forequarter and hindquarter from one-half the carcass prepared as described in Item No. 100.

Item No. 102 - Forequarter—The forequarter is the anterior portion of the side after severance from the hindquarter as described in Item No. 100. The forequarter shall be trimmed as described in Item No. 100.

Item No. 102A - Forequarter, Boneless—The boneless forequarter is prepared from Item No. 102. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, and the prescapular lymph gland shall be removed. The thick tendinous ends of the shank shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean. The clod shall be removed without undue scoring.

Item No. 103 - Rib, Primal—The primal rib is that portion of the forequarter remaining after the removal of the cross-cut chuck and short plate, the skeletal part of which contains parts of seven ribs (6th to 12th inclusive), the section of the backbone attached to the ribs and the posterior tip of the blade bone (*scapula*). The cross-cut chuck is removed by a straight cut perpendicular to the split surface of the backbone between the 5th and 6th ribs. The short plate shall be removed by a straight cut across the ribs from a point on the 12th rib which is not more than 10 inches from the center of the inside protruding edge of the 12th thoracic vertebra through a point on the 6th rib which is not more than 10 inches from the center of the inside protruding edge of the 6th thoracic vertebra. The portion of the diaphragm and practically all of the fat remaining on the ventral surface of the vertebrae shall be removed.

Item No. 107 - Rib, Oven-Prepared—The oven-prepared rib is prepared from a Rib, Primal - Item No. 103. A straight cut is made across the ribs from a point on the 12th rib which is not more than 3 inches from the outer tip of the ribeye muscle through a point on the 6th rib which is not more than 4 inches from the outer tip of the ribeye muscle. The chine bone shall be removed by a straight cut along a line at which the vertebrae joins the feather bones exposing the lean but leaving the feather bones attached to the oven-prepared rib. The blade bone and related cartilage shall be removed.

Item No. 108 - Rib, Oven-Prepared, Boneless and Tied—The boneless and tied oven-prepared rib is the same as Item No. 107 except that the bones, backstrap, and rib fingers (*intercostal* meat) shall be removed. The boneless rib shall be tied girthwise and lengthwise.

Item No. 109 - Rib, Roast Ready—The roast-ready rib is prepared from a Rib, Primal - Item No. 103. A straight cut is made across the ribs from a point on the 12th rib which is not more than 3 inches from the outer tip of the ribeye muscle through a point on the 6th rib which is not more than 4 inches from the outer tip of the ribeye muscle. The chine bone shall be removed by a straight cut along a line at which the vertebrae join the featherbones exposing the lean meat but leaving the featherbones attached to the roast-ready rib. The bladebone and related cartilage, all of the muscles lying above the level of the bladebone and cartilage, the small muscles lying below and firmly attached to the bladebone, and the backstrap shall be removed. The exterior fat covering and featherbones shall be held in their natural positions by typing girthwise and lengthwise.

Item No. 109A - Rib Roast Ready, Special—The special roast ready rib is prepared from a Rib, Primal - Item No. 103. The chine bone shall be removed by a straight cut along a line at which the vertebrae join the feather bones exposing the lean meat. The feather bones shall be removed. Beginning at the sawed ends of the rib bones, the exterior fat covering over the entire rib shall be lifted intact from over the outermost muscles. All of the muscles lying above the level at the blade bone, the blade bone and cartilage, the small muscles below and firmly attached to the blade bone, and the backstrap shall be removed. The short ribs are then removed by a straight cut across the ribs from a point on the 12th rib which is not more than 3 inches from the outer tip of the ribeye muscle through a point on the 6th rib which is not more than 4 inches from the outer tip of the ribeye muscle. The fat overlying the ribeye muscle must be trimmed to a uniform level for the entire area of the seamed surface. The exterior fat shall be returned to its natural position, except that it shall extend from the ends of the rib bones where the chine bone was removed to the sawed ends of the rib bones. Fat cover extending beyond the sawed ends of the rib bones shall be removed even with the ends. The exterior fat covering shall be held in place by tying girthwise and lengthwise.

Item No. 109B - Blade Meat—This item consists of the portions of the *latissimus dorsi*, *trapezius*, and *serratus ventralis* muscles contained in the primal rib. The lean surfaces shall be trimmed practically free of fat.

Item No. 110 - Rib, Roast-Ready, Boneless and Tied—The boneless and tied roast-ready rib is the same as Item No. 109 except that all bones and the rib fingers (*intercostal* meat) are removed. The boneless roast-ready rib shall be tied girthwise and lengthwise.

Item No. 111 - Spencer Roll—The spencer roll is prepared from a Rib, Primal - Item No. 103. A straight cut is made from a point not more than 2 inches from the outer tip of the ribeye muscle on the loin end to a point not more than 1 inch from the outer tip of the ribeye muscle on the chuck end. All bones, cartilage, the backstrap, rib fingers (*intercostal* meat), and the muscles and fat overlying the bladebone and cartilage shall be removed.

Item No. 112 - Ribeye Roll—The ribeye roll includes the *longissimus dorsi*, *spinalis dorsi*, *multifidus dorsi*, and *complexus* muscles of a Rib, Primal - Item No. 103. All other muscles, bones, cartilage, backstrap, and the exterior fat covering shall be removed.

Item No. 112A - Ribeye Roll, Lip-On—The lip-on ribeye roll is the same as Item No. 112 except that a "lip" (*serratus dorsalis* and *longissimus costarum* muscles and related inter-muscular fat) remains firmly attached to the ribeye roll. The "lip" shall be removed by a straight cut which is not more than 2 inches from the outer tip of the ribeye muscle.

Item No. 113 - Square-Cut Chuck—The square-cut chuck is that portion of the Forequarter - Item No. 102 - remaining after the removal of the foreshank, brisket, short plate, and rib and is obtained by two straight cuts perpendicular to the split surface of the backbone. The first cut passes across the forequarter between the 5th and 6th ribs (this cut separates the cross-cut chuck from the rib and short plate). The second cut passes through the cartilaginous juncture of the first rib and the sternum continuing in a straight line to the 5th rib perpendicular to the first described cut (this cut severs the foreshank and brisket from the square-cut chuck).

Item No. 114 - Shoulder Clod—The shoulder clod is the large outside muscle system which lies posterior to the elbow joint and ventral to the medial ridge of the blade bone. The thick end of the clod includes all muscles overlying the first natural seam and the thinner end includes all the muscles lying above the rear portion of the blade bone. The clod shall be removed without undue scoring.

Item No. 114A - Shoulder Clod Roast—The shoulder clod roast is the same as Item No. 114 except that the shoulder rose (*cutaneous* muscle) shall be removed when the underlying fat is in excess of the surface fat thickness specified. In this instance, the underlying fat must be trimmed to comply with the surface fat thickness requirements. The heavy tendons at the elbow end of the clod shall be trimmed even with the lean and all sides shall be trimmed so that the clod is not less than 1 inch thick at any point. When smaller roasts are specified, the thick end of the clod shall be made into one roast and the thin end shall be split lengthwise, the ends reversed and the boned surfaces placed together to produce a uniformly thick roast. These roasts shall be held intact by tying girthwise.

Item No. 115 - Square-Cut Chuck, Boneless—The boneless square-cut chuck is prepared from Item No. 113. The shoulder clod shall be removed without undue scoring. (As an alternative, the shoulder clod may be removed before preparing the square-cut chuck permitting the utilization of the full clod.) Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular lymph gland shall be removed. The remainder of the chuck may be separated by a straight cut, approximately parallel to the major back muscles, which is not less than 3 inches from the outer tip of the "chuck eye" muscle. Unless otherwise specified, each piece shall be individually wrapped and packed in the same container.

Item No. 116 - Square-Cut Chuck, Boneless, Clod Out—The boneless, square-cut chuck, clod out is the same as Item No. 115 except that the shoulder clod is excluded.

Item No. 116A - Chuck Roll—The chuck roll is prepared from a boneless, clod out chuck. In addition, the chuck tender, the chuck cover, the thin muscle (*subscapularis*) underlying the blade bone, meat with dark discoloration, all cartilage, backstrap, exposed large blood vessels, and rib fingers (*intercostal* meat) shall be removed. The chuck roll is then made by two cuts: (1) One cut is made perpendicular to the outer skin surface, parallel to the normal line of separation of the chuck and rib and immediately posterior to the prescapular lymph gland (fat surrounding this gland shall be removed). This cut separates the neck portion from the major portion of the chuck. (2) A second cut is made perpendicular to the outer skin surface through a point on the rib end which is 3 inches from the outer tip of the "chuck eye" muscle and continuing in a reasonably straight line approximately parallel to the backbone side to intersect the first cut, thus producing a chuck roll reasonably uniform in width and thickness. The chuck roll shall be tied. When smaller roasts are specified, the chuck roll shall be separated by cutting through the meat at an approximate right angle to the length of the chuck roll.

Item No. 117 - Foreshank—The foreshank is the foreleg portion remaining intact with the brisket after removal from the cross-cut chuck in making the Square-Cut Chuck - Item No. 113. The foreshank is separated from the brisket by a cut following the natural seam, except that part of the web muscle may remain on the foreshank.

Item No. 118 - Brisket—The brisket is separated from the foreshank as described in Item No. 117. Practically all heart fat shall be removed.

Item No. 119 - Brisket, Boneless, Deckle On—The boneless brisket is that portion of Item No. 118 remaining after all bones and rib fingers (*intercostal* meat) have been removed.

Item No. 120 - Brisket, Boneless, Deckle Off—The boneless, deckle off brisket is the same as Item No. 119 except that the deckle shall be removed at the natural seam exposing the lean surface lying below. The hard fat along the sternum edge of the brisket shall be trimmed level with the boned surface of the brisket and to within 1/2 inch of the lean lying between

the hard fat and the border of the skin surface. The inside lean surface shall be trimmed practically free of fat without undue scoring of the lean surface.

Item No. 121 - Short Plate—The short plate is that portion of the forequarter immediately below the Rib, Primal - Item No. 103 - and is separated from the primal rib as described therein.

Item No. 121A - Short Plate, Boneless—The boneless short plate is the same as Item No. 121 except that the bones, cartilage, intercostal meat, diaphragm, and serous membrane (peritoneum) shall be removed.

Item No. 122 - Full Plate—The full plate is the short plate and brisket intact. The short plate is separated from the rib as described in Rib, Primal - Item No. 103. The brisket is separated from the chuck as described in Square-Cut Chuck - Item No. 113 - and from the foreshank as described in Foreshank - Item No. 117.

Item No. 122A - Full Plate, Boneless—The boneless full plate is the same as Item No. 122 except that all bones, cartilage, intercostal meat, diaphragm, and serous membrane (peritoneum) shall be removed.

Item No. 123 - Short Ribs—Short ribs are prepared from the 6th through the 10th ribs of the rib end of the primal rib and/or the short plate by cutting across the rib bones parallel to the cut which separated the rib and the short plate. Short ribs produced from the short plate may not include the costal rib cartilage. The *cutaneous* muscle shall be removed. The surface fat shall not exceed 1/4 inch in thickness. The width of the short ribs shall be specified by the purchaser.

Item No. 123A - Short Ribs, Short Plate—This item is prepared from the 6th, 7th, and 8th ribs of the Short Plate - Item No. 121 - by cutting across the rib bones parallel to the cut made when separating the short plate from the primal rib. Short ribs produced from the short plate may not include the costal rib cartilages. The *cutaneous* muscle, the exterior fat cover, and the first layer of lean shall be removed. Surface fat thickness shall not exceed 1/4 inch. The width of the short ribs shall be specified by the purchaser.

Item No. 123B - Short Ribs, Special—This item is prepared from the 6th, 7th, and 8th ribs of the rib end of the Rib, Primal - Item No. 103 - by cutting across the rib bones parallel to the cut made when separating the primal rib from the short plate. The *cutaneous* muscle, the exterior fat cover, and the first layer of lean are removed. Surface fat thickness shall not exceed 1/4 inch. The width of the short ribs shall be specified by the purchaser.

Item No. 125 - Armbone Chuck—The armbone chuck is the Square-Cut Chuck - Item No. 113 - and Foreshank - Item No. 117 - intact.

Item No. 126 - Armbone Chuck, Boneless—The boneless armbone chuck is prepared from Item No. 125. The clod shall be removed without undue scoring. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular lymph gland shall be removed. The thick tendinous ends of the shank shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean. The remainder of the chuck may be separated into two portions by a straight cut, approximately parallel to the major back muscles, which is not less than 3 inches from the outer tip of the "chuck eye" muscle. Unless otherwise specified, each piece shall be individually wrapped and packed in the same container.

Item No. 126A - Armbone Chuck, Boneless, Clod Out—The boneless, clod out armbone chuck, is the same as Item No. 126 except that the shoulder clod is excluded.

Item No. 127 - Cross-Cut Chuck—The cross-cut chuck is the Square-Cut Chuck - Item No. 113, Foreshank - Item No. 117, and Brisket - Item No. 118 - intact.

Item No. 128 - Cross-Cut Chuck, Boneless—The boneless cross-cut chuck is prepared from Item No. 127. The clod shall be removed without undue scoring. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular lymph gland shall be removed. The thick tendinous ends of the shank shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean. The remainder of the chuck may be separated into two portions by a straight cut, approximately parallel to the major back muscles, which is not less than 3 inches from the outer tip of the "chuck eye" muscle. Unless otherwise specified, each piece shall be individually wrapped and packed in the same container.

Item No. 132 - Triangle—The triangle is that portion of the forequarter remaining after the removal of the Rib, Primal - Item No. 103. The rib is separated from the triangle by a straight cut across the ribs, perpendicular to the outer skin surface to a point on the inside of the 5th rib which is not less than 10 inches from the center of the inside protruding edge of the 5th thoracic vertebra. A second cut is made perpendicular to the split surface of the backbone between the 5th and 6th ribs through the bladebone and backbone to remove the primal rib.

Item No. 133 - Traingle, Boneless—The boneless triangle is prepared from Item No. 132. The clod is removed without undue scoring. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular lymph gland shall be removed. The thick tendinous ends of the shank shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean.

Item No. 134 - Beef Bones—Beef bones consist of any one or any combination of *shank*, *femur*, or *humerus* bones sawed into lengths not to exceed 8 inches. Marrow shall be exposed on at least one end. The bones shall be fresh and show no evidence of rancidity, sourness, or other deterioration.

Item No. 135 - Diced Beef—This item may be prepared from any combination of carcasses or cuts which will produce diced beef complying with the end product requirements. Meat from shanks is not acceptable. Meat with dark discoloration and all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular, popliteal, and prefemoral lymph glands shall be removed. Prior to dicing, the meat shall be trimmed in such a manner that surface and seam fat shall not exceed 1/2 inch in thickness at any one point. In addition, the fat content of the boneless meat, determined visually, shall not exceed 25 percent.

After being prepared as described above, the boneless meat shall be either hand-diced or processed through a dicing machine (grinding not permitted). Not less than 75 percent, by weight, of the resulting pieces shall be of a size which is equivalent of not less than a 3/4 inch cube or not more than a 1-1/2 inch cube and no individual surface on these pieces shall exceed 2-1/2 inches in length.

For machine-diced product requiring one hour or more to produce, compliance with the piece-size requirement shall be determined as follows: The grader shall examine an approximate 5-pound sample selected during each 20 minutes of production. Failure of a sample to meet the piece-size requirement shall cause rejection of all product produced after the last acceptable sample was drawn until the next acceptable sample is drawn. Following a rejection, more

frequent samples may be taken at the request of the contractor until an acceptable sample is drawn. Rejected product may be reworked and reoffered for acceptance.

For machine-diced product requiring less than one hour to produce, for hand-diced product, and for reworked product, the grader shall sample the amount of product he feels necessary to determine that the entire lot complies with the piece-size requirement.

Item No. 135A - Beef for Stewing—This item is the same as Item No. 135 - Diced Beef except that the surface or seam fat of the boneless meat prior to dicing shall not exceed 1/4 inch in thickness at any one point. In addition, the fat content of the boneless meat determined visually shall not exceed 20 percent.

Item No. 136 - Ground Beef, Regular

Material

Regular ground beef may be prepared from any beef (graded or ungraded) including trimmings. Meat from the head, tongue, heart, or esophagus or straight (added) fat is not acceptable. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular, popliteal, and prefemoral lymph glands shall be removed. The thick tendinous ends of shanks shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean.

Processing

After being prepared as described above, the boneless meat shall be ground at least once through a plate having holes no larger than 3/4 inch in diameter (or it may be otherwise reduced in size provided the texture and appearance of the product after final grinding is typical of ground beef prepared by grinding only.) Final grinding shall be through a plate having holes 1/8 inch in diameter.

The meat shall be thoroughly blended prior to and subsequent to each reduction in size except that the ground beef shall not be mixed after the final grinding.

The boneless meat shall not exceed 50°F. during grinding and packaging. The ground beef shall be packaged in the amount specified by the purchaser and packed immediately upon completion of grinding.

Fat Content

The visual fat content of the boneless meat, determined prior to grinding, shall not exceed 25 percent.

However, if specified, for product to be delivered frozen, the fat content of the finished product shall be determined by chemical analysis. In such cases, compliance shall be based on the analyses of 4 samples of finished product from a lot. (A lot shall be not more than the amount of product produced in a single workshift.) Analyses shall be performed in an AMS laboratory in accordance with the Official Methods of Analyses of the Association of Official Analytical Chemists. Product shall be rejected (1) if the fat content analysis of one or more of the individual 4 sample units is more than 30.0 percent and/or (2) if the arithmetic average of the fat content analyses of the 4 individual sample units exceeds 25.00 percent. When chemical analysis is specified, the ground beef shall be produced a sufficient number of days prior to shipping to permit receipt of the fat content analysis results.

Withdrawing Samples for Chemical Analysis

The grader shall randomly select four filled shipping containers from each lot. From each container he shall select (1) either one unit of bulk ground beef from which he shall cut three adjacent approximately 1-pound samples, or (2) 12 adjacent patties which shall be divided into 3 samples of 4 adjacent patties each. Each of the three samples shall be placed in an individual container that will prevent loss or gain of moisture or contamination. The three samples from each individual unit shall be assigned the same identification number and one sample from each individual unit shall be submitted to an AMS laboratory for fat content analysis; one sample from each unit shall be solidly frozen and retained by the grader as a reserve sample; the remaining sample from each unit shall be offered to the contractor. The reserve samples shall be used for analysis (1) when the original is lost, or (2) if requested by the purchaser or the contractor. When reserve samples are analyzed, all four samples shall be analyzed. Unused reserve samples shall be returned to the contractor after final acceptance or rejection of the involved product.

After withdrawal of samples, the contractor shall make correct fills of the boxes sampled by adding the necessary ground beef produced from the same lot.

Item No. 136A - Ground Beef, Regular, TVP Added¹—This item is the same as Item No. 136 except that hydrated textured vegetable protein (TVP) shall be uniformly mixed with the coarsely ground beef at a ratio of not more than 1 part hydrated TVP to not less than 4 parts beef by weight. The TVP shall be hydrated at a ratio of 1 part TVP to not more than 1.5 parts water, by weight. Textured vegetable protein used shall be approved by the USDA, Food and Nutrition Service, and shall be caramel colored with beef flavoring. The visual fat content of the boneless meat, determined prior to grinding, shall not exceed 30 percent.

Item No. 137 - Ground Beef, Special—This item is the same as Item No. 136 except that not less than 50 percent, by weight, of any one or any combination of graded primal cuts (square-cut chucks, ribs, trimmed full loins, trimmed short loins, loin ends, or rounds) shall be used. Tenderloins may be excluded. Compliance with the formulation requirement shall be determined on a boneless basis. Primal cuts which have had more than a slight amount of lean removed may be used provided that meat of similar character and amount is added from the above listed primal cuts.

Item No. 155 - Hindquarter—The hindquarter is the posterior portion of the side after severance from the forequarter as described in Item No. 100.

Item No. 155A - Hindquarter, Boneless—This item is prepared from Item No. 155. Meat with dark discoloration, all bones, cartilage, exposed large blood vessels, the prefemoral and popliteal lymph glands, kidney, mammary tissue, and the heavy connective tissue surrounding the kneecap shall be removed. The thick tendinous ends of the shank shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean. The tenderloin may be withheld.

Item No. 158 - Round, Primal—The primal round is that portion of the Hindquarter - Item No. 155 - remaining after the removal of the untrimmed loin. The untrimmed loin is removed by a straight cut perpendicular to the outer skin surface beginning at the juncture of the last sacral vertebra and the first caudal vertebra passing through a second point which is immediately anterior to the protuberance of the *femur* bone and exposing the ball of the *femur* bone and then continuing in the same straight line completing the cut. No more than two tail vertebrae may remain on the round.

¹ Note clarification at the end of the IMPS beef section.

Item No. 159 - Round, Boneless—The boneless round is the same as Item No. 158 except that it shall be made boneless. The round bone shall be removed after making a cut along the natural seam between the knuckle and the *sartorius* muscle of the top round. All cartilage, heavy connective tissue, and the thick opaque portion of the gracilis membrane shall be removed. The thick tendinous ends of the shank shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean.

Item No. 160 - Round, Shank Off, Partially Boneless—This item is prepared from Item No. 158. The shank shall be removed along the natural seam between the shank meat and the heel (*gastrocnemius* muscle). The aitch bone and tail bones and the thick opaque portion of the gracilis membrane shall be removed. The round bone shall be left in the round.

Item No. 161 - Round, Shank Off, Boneless—This item is the same as Item No. 160 except that it shall be made boneless. The round bone shall be removed as described in Item No. 159.

Item No. 163 - Round, Shank Off, 3-Way Boneless—This item is the same as Item No. 161 except that it shall be separated into 3 pieces; Knuckle - Item No. 167, Top (Inside) Round - Item No. 168, and Bottom (Gooseneck) Round - Item No. 170. The round bone shall be removed as described in Item No. 159. The top round and the knuckle shall be separated from the bottom round along the natural seams between these sections. The top round, bottom round, and knuckle shall be individually wrapped and packed in the same container.

Item No. 164 - Round, Rump and Shank Off—This item is prepared from Item No. 158 by removing the shank and rough rump. The shank is removed as described in Item No. 160. The rough rump is removed by a straight cut perpendicular to the outer skin surface immediately posterior to and parallel with the long axis of the exposed surface of the aitch bone, leaving no part of the aitch bone in the round. The separation of the rump from the round is completed by sawing through the round bone (*femur*).

Item No. 165 - Round, Rump and Shank Off, Boneless—This item is the same as Item No. 164 except that it shall be made boneless. The round bone (*femur*) shall be removed as described in Item No. 159. The kneecap (*patella*) and surrounding heavy connective tissue shall be removed. The thick opaque portion of the gracilis membrane shall be removed.

Item No. 165A - Round, Rump and Shank Off, Boneless, Special—This item is prepared from Item No. 161. The rump shall be removed by a straight cut through the bottom round perpendicular to the outer skin surface starting along the inner, anterior edge of the top round.

Item No. 165B - Round, Rump and Shank Off, Boneless, Tied, Special—This item is the same as Item No. 165A except that it shall be tied girthwise and lengthwise.

Item No. 166 - Round, Rump and Shank Off, Boneless, Tied—This item is the same as Item No. 165 except that it shall be tied girthwise and lengthwise.

Item No. 166A - Round, Rump Partially Removed, Shank Off—This item is the same as Item No. 164 except that part of the rump shall be removed as follows. The aitch bone and tail bones shall be removed. The rump shall be removed by a straight cut beginning at the anterior end of the protuberance of the femur bone and which also is perpendicular to the outer skin surface and perpendicular to the length of the round bone.

Item No. 167 - Knuckle—The knuckle is that portion of Item No. 158 that is ventral to the round bone and is prepared as described in Item No. 163. When smaller roasts are specified,

the knuckle shall be separated by a straight, lengthwise cut which is reasonably perpendicular to the outer skin surface.

Item No. 167A - Knuckle, Special—This item is the same as Item No. 167 except that the outside "skin" tissue, fat, and the overlying muscle (*tensor fasciae latae*) shall be removed along the natural seam separating them from the knuckle. When smaller roasts are specified, the knuckle shall be separated by a straight, lengthwise cut which is reasonably perpendicular to the outer skin surface.

Item No. 168 - Top (Inside) Round—The top round is the inside portion of Item No. 158 that is posterior to the round bone and is prepared as described in Item No. 163. When smaller roasts are specified, the top round shall be separated by not more than 2 lengthwise cuts and subsequent cuts, if necessary, shall be made girthwise. All cuts shall be made reasonably perpendicular to the outer skin surface.

Item No. 170 - Bottom (Gooseneck) Round—The bottom round is the outside portion of Item No. 158 that is posterior to the round bone and is prepared as described in Item No. 163. The heavy connective tissue on the edge of the bottom round adjacent to the knuckle shall be removed.

Item No. 170A - Bottom (Gooseneck) Round, Heel Out—This item is the same as Item No. 170 except that the heel (*gastrocnemius* muscle) is removed along the natural seam separating it from the eye muscle (*semitendinosus*) and the outside muscle (*biceps femoris*). When smaller roasts are specified, the rump shall be removed by a cut approximately perpendicular to the length of the bottom round. The remaining portion shall be divided by a cut(s) approximately parallel with the bottom round length. All cuts shall be made reasonably perpendicular to the outer skin surface.

Item No. 171 - Bottom (Gooseneck) Round, Untrimmed—The bottom round is the outside portion of Item No. 158 that is posterior to the round bone and is prepared as described in Item No. 163.

Item No. 171A - Bottom (Gooseneck) Round, Untrimmed, Heel Out—This item is the same as Item No. 171 except that the heel (*gastrocnemius* muscle) is removed along the natural seam separating it from the eye muscle (*semitendinosus*) and the outside muscle (*biceps femoris*). When smaller roasts are specified, the rump shall be removed by a cut approximately perpendicular to the length of the bottom round. The remaining portion shall be divided by a cut(s) approximately parallel with the bottom round length. All cuts shall be made reasonably perpendicular to the outer skin surface.

Item No. 171B - Outside Round—This item is prepared from Item No. 171A by removing the eye muscle along the natural seam separating it from the outside muscle.

Item No. 171C - Eye of Round—The eye of round is prepared as described in Item No. 171B.

Item No. 172 - Full Loin, Trimmed—The trimmed full loin is that portion of the hindquarter remaining after the removal of the Round, Primal - Item No. 158, flank, hanging tender, kidney knob, and excess fat from both the lumbar and sacral regions on the inner surface of the loin. The kidney knob and the fat lying closely around the kidney shall be removed by a cut starting at the rear end of the kidney and slanting directly to the rear edge of the 13th rib, thus leaving the 13th rib practically free of lumbar fat. The hanging tender shall be removed. The flank shall be removed by a straight cut perpendicular to the outer skin surface from a point on the round end no more than one inch from the ventral edge of the sirloin through a

point on the 13th rib which is not more than 10 inches from the center of the protruding edge of the 13th thoracic vertebra. The fat shall be trimmed from the internal lumbar section of the loin with the full loin lying unsupported with the outer skin surface down on a flat surface. The fat above a plane parallel to the surface of the cutting bench and level with the protruding edge of the chine bone shall be removed. Another cut shall be made to remove all fat above a plane using the following two lines as guides for each edge of the plane: An imaginary line 1 inch above the protruding edge of the chine bone to a line on the inside of the loin 2 inches from the flank edge. The fat remaining in the sacral region shall not exceed 1 inch in thickness.

Item No. 173 - Short Loin—The short loin is the anterior portion of Item No. 172. It is separated from the Sirloin - Item No. 181 - by a straight cut perpendicular to the outer skin surface and perpendicular to the split surface of the lumbar vertebrae through a point immediately anterior to the hip bone leaving no part of the hip bone and related cartilage in the short loin.

Item No. 174 - Short Loin, Short-Cut—This item is the same as Item No. 173 except that the flank edge is removed by a straight cut perpendicular to the outer skin surface from a point on the rib end which is not more than 3 inches from the outer tip of the loin eye muscle through a point on the sirloin end which is not more than 2 inches from the outer tip of the loin eye muscle.

Item No. 175 - Strip Loin—The strip loin is prepared from the Short Loin - Item No. 173. The short tenderloin is removed. (As an alternative, the tenderloin may be removed from the full loin before removing the sirloin.) The protruding edge of the chine bone shall be removed by sawing at an approximate 45 degree angle to the split thoracic vertebrae beginning at the dorsal edge of the spinal cord groove. The flank edge shall be removed by a straight cut perpendicular to the outer skin surface from a point on the rib end which is not more than 6 inches from the outer tip of the loin eye muscle through a point on the sirloin end which is not more than 4 inches from the outer tip of the loin eye muscle.

Item No. 176 - Strip Loin, Boneless—The boneless strip loin is the same as Item No. 175 except that all bones and cartilage shall be removed.

Item No. 177 - Strip Loin, Intermediate—This item is the same as Item No. 175 except that the flank edge is removed by a straight cut perpendicular to the outer skin surface from a point on the rib end which is not more than 4 inches from the outer tip of the loin eye muscle through a point on the sirloin end which is not more than 3 inches from the outer tip of the loin eye muscle.

Item No. 178 - Strip Loin, Intermediate, Boneless—This item is the same as Item No. 177 except that all bones and cartilage shall be removed.

Item No. 179 - Strip Loin, Short Cut—This item is the same as Item No. 175 except that the flank edge is removed by a straight cut perpendicular to the outer skin surface from a point on the rib end which is not more than 3 inches from the outer tip of the loin eye muscle through a point on the sirloin end which is not more than 2 inches from the loin eye muscle.

Item No. 180 - Strip Loin, Short Cut, Boneless—This item is the same as Item No. 179 except that all bones and cartilage shall be removed.

Item No. 181 - Sirloin—The sirloin is the posterior portion of the Full Loin, Trimmed - Item No. 172. It is separated from the Short Loin - Item No. 173 - as described in that item.

Item No. 182 - Sirloin Butt, Boneless—The boneless sirloin butt is the same as Item No. 181 except that the bones and the butt tenderloin shall be removed.

Item No. 183 - Sirloin Butt, Trimmed—This item is prepared from Item No. 182. The flap muscle (*obliquus abdominis internus*) and underlying membrane shall be removed. The fat on the ventral and anterior sides shall be trimmed to the specified surface fat thickness. However, the pocket of fat within the bottom sirloin and adjacent to the top sirloin need not be trimmed to the specified surface fat thickness but shall be trimmed only to a smooth even surface. The heavy connective tissue adjacent to the sacral vertebrae shall be removed.

Item No. 184 - Top Sirloin Butt—The top sirloin butt is prepared from Item No. 182. The top and bottom sirloin butts shall be separated by a straight cut along the natural seam and continuing in the same plane to the outside surface completing the separation and leaving a portion of the bottom sirloin butt attached to the top sirloin butt. The heavy connective tissue adjacent to the sacral vertebrae shall be removed. If specified, roasts shall be tied parallel to the cut surface made by separating the loin from the round.

Item No. 185 - Bottom Sirloin Butt—The bottom sirloin butt is that portion of Item No. 182 remaining after removal of the top sirloin butt as described in Item No. 184.

Item No. 185A - Bottom Sirloin Flap—This item is the loosely attached muscle (*obliquus abdominis internus*) on the inner surface of the bottom sirloin butt. Practically all of the surface fat and connective tissue shall be removed.

Item No. 185B - Bottom Sirloin Ball Tip—This item is that portion of the knuckle muscles in the posterior end of the bottom sirloin butt. The ball tip shall be removed from the bottom sirloin butt along the natural seam. Surface fat thickness shall not exceed an average of 1/4 inch.

Item No. 185C - Bottom Sirloin Triangle—This item is the triangular shaped muscle (*tensor fasciae latae*) in the ventral end of the bottom sirloin butt. Surface fat thickness on the triangle shall not exceed an average of 1/2 inch.

Item No. 185D - Bottom Sirloin Triangle, Defatted—This item is the same as Item No. 185C except that practically all of the surface fat and membranous tissue shall be removed.

Item No. 186 - Bottom Sirloin Butt, Trimmed—The trimmed bottom sirloin butt is the same as Item No. 185 except that the flap muscle and the underlying membrane shall be removed. The fat on the ventral and anterior sides and the pocket of fat on the inside shall be trimmed to the specified surface fat thickness. If specified, roasts shall be tied parallel to the cut surface made by separating the loin from the round.

Item No. 189 - Full Tenderloin—The tenderloin is removed from the full loin intact. Surface fat shall not exceed 3/4 inch in thickness on the butt end up to the point where the large lymph gland is exposed. The fat shall then be tapered down to the lean at a point not beyond 3/4 of the length of the tenderloin measured from the butt end. The tenderloin shall be trimmed free of ragged edges. Tenderloins with scores exceeding 1/2 inch in depth are not acceptable.

Item No. 189A - Full Tenderloin, Defatted—The defatted tenderloin is prepared from Item No. 189 by removing all surface fat including the fat lying between the main body of the tenderloin and the wing muscle (*iliacus*). The side strip muscle and underlying fat may remain if firmly attached to the main body of the tenderloin. Tenderloins with scores exceeding 1/2 inch in depth are not acceptable.

Item No. 190 - Full Tenderloin, Special—This item is the same as Item No. 189 except that the side strip muscle and all fat shall be removed. Other loose tissue shall be removed but the principal membranous tissue over the tenderloin muscle shall remain intact. Tenderloins with scores exceeding 1/2 inch in depth are not acceptable.

Item No. 190A - Full Tenderloin Skinned—This item is the same as Item No. 190 except that practically all of the membranous tissue over the tenderloin muscle shall be removed. Tenderloins with scores exceeding 1/2 inch in depth are not acceptable.

Item No. 191 - Butt Tenderloin—The butt tenderloin is that portion of the tenderloin muscle removed from a Sirloin - Item No. 181. The tenderloin shall be trimmed so that the fat does not exceed 3/4 inch in thickness at any one point. The large lymph gland shall be exposed. The tenderloin shall be trimmed free of all ragged and thin edges. Tenderloins with scores exceeding 1/2 inch in depth are not acceptable.

Item No. 192 - Short Tenderloin—The short tenderloin is that portion of the tenderloin muscle removed from the Short Loin - Item No. 173. The fat on the short tenderloin shall not exceed 1/2 inch in thickness at the sirloin end and shall be tapered down to the lean at a point not more than half the length of the short tenderloin measured from the sirloin end. The short tenderloin shall be trimmed free of all ragged and thin edges. Tenderloins with scores exceeding 1/2 inch in depth are not acceptable.

Item No. 193 - Flank Steak—The flank steak is the flat muscle (*rectus abdominis*) embedded in the inside of the cod or udder end of the flank and is obtained by stripping the serous membrane from over the flank steak, loosening the narrow end of the muscle, and separating it from the thick membrane which lies underneath. The flank steak shall be practically free from fat and membranous tissue.

DETAILED REQUIREMENTS FOR PORTION-CUT PRODUCTS

Item No. 1100 - Cubed Steaks—Cubed steaks may be produced from any boneless meat from the beef carcass which is reasonably free of membranous tissue, tendons, and ligaments. The meat shall be made into cubed steaks through use of machines designed for this purpose. Knitting of two or more pieces and folding of the meat when cubing is permissible. Cubed steaks shall be reasonably uniform in shape, i.e., practically square, round or oval. After cubing, surface fat on the edge of the cubed steaks shall not exceed 1/2 inch in width at any one point when measured from the edge of the lean. Surface and seam fat shall cover not more than 15 percent of the total area on either side of the steak. The cubed steak shall not break when suspended from any point 1/2 inch from the outer edge of the steak.

Item No. 1101 - Cubed Steaks, Special—Special cubed steaks shall meet all the requirements for Item No. 1100 except that they shall be produced only from muscles contained in the round, loin, rib, or square-cut chuck. Knitting of two or more pieces or folding of the meat is not acceptable.

Item No. 1102 - Braising Steaks, Swiss—Braising steaks shall be produced from any part of any one or any combination of the following boneless cuts of beef:

Item No. 112 - Ribeye Roll

Item No. 114 - Shoulder Clod

Item No. 167 - Knuckle

Item No. 168 - Top Round

- Item No. 170A - Bottom Round, Heel Out
- Item No. 180 - Strip Loin, Short Cut, Boneless
- Item No. 184 - Top Sirloin Butt
- Item No. 186 - Bottom Sirloin Butt, Trimmed

Each braising steak shall be practically free of fat on at least 1/2 of the circumference and the surface fat on the remaining half of the circumference shall not exceed 1/2 inch at any one point. If specified by the purchaser, each steak shall be mechanically tenderized using machines designed for this purpose. Knitting of two or more pieces of meat or folding of the meat is unacceptable.

Item No. 1103 - Rib Steaks—Rib steaks shall be prepared from a Rib, Primal - Item No. 103. The short ribs on individual steaks shall be removed at a point which is not more than 3 inches from the outer tip of the ribeye muscle. All muscles above the major ribeye muscle, fat overlying these muscles, the blade bone and cartilage, the feather bones, and the backstrap shall be removed.

Item No. 1103A - Rib Steaks, Boneless—Boneless rib steaks shall be prepared as described in Item No. 1103 except that all bones and rib fingers (*intercostal* meat) shall be removed.

Item No. 1112 - Ribeye Roll Steaks—Ribeye roll steaks shall be prepared from a Ribeye Roll - Item No. 112.

Item No. 1112A - Ribeye Roll, Lip-On Steaks—This item shall be prepared from a Ribeye Roll, Lip-On - Item No. 112A. The "lip" shall be firmly attached.

Item No. 1136 - Ground Beef Patties, Regular—This item shall be prepared from Ground Beef, Regular - Item No. 136. The ground beef shall be mechanically formed into round patties of the size specified. They shall be arranged in stacks with each patty separated from adjacent patties by two sheets of waxed patty paper except that, when patties are individually quick frozen, the patty paper may be excluded. When producing patties to be delivered frozen, frozen boneless beef previously accepted in the fresh state may be used.

Item No. 1136A - Ground Beef Patties, Regular TVP Added—This item is the same as Item No. 1136, except that it shall be prepared from Ground Beef, TVP Added - Item No. 136A.

Item No. 1137 - Ground Beef Patties, Special—This item is the same as Item No. 1136, except that it shall be prepared from Ground Beef, Special - Item No. 137.

Item No. 1167 - Knuckle Steaks—Knuckle steaks shall be prepared from a Knuckle, Trimmed - Item No. 167A. The knuckle may be separated lengthwise into sections to accommodate the cutting of specified portion-size steaks.

Item No. 1168 - Top (Inside) Round Steaks—Top round steaks shall be prepared from a Top Round - Item No. 168. The top round may be separated lengthwise into sections to accommodate the cutting of specified portion-size steaks.

Item No. 1170 - Bottom (Gooseneck) Round Steaks—Bottom round steaks shall be prepared from a Bottom Round, Heel Out - Item No. 170A. The bottom round may be separated lengthwise into sections to accommodate the cutting of specified portion-size steaks.

Item No. 1173 - Porterhouse Steaks—Porterhouse steaks shall be prepared from a Short Loin - Item No. 173 or a portion thereof. The flank edge on individual steaks shall be removed

at a point which is not more than 4 inches from the outer tip of the loin eye muscle. The diameter of the tenderloin muscle shall be not less than 1-1/4 inches when measured through the center of the tenderloin, parallel to the backbone.

Item No. 1173A - Porterhouse Steaks, Intermediate—This item is the same as Item No. 1173 except the flank edge on individual steaks shall be removed at a point which not more than 3 inches from the outer tip of the loin eye muscle.

Item No. 1173B - Porterhouse Steaks, Short Cut—This item is the same as Item No. 1173 except the flank edge on individual steaks shall be removed at a point which is not more than 2 inches from the outer tip of the loin eye muscle.

Item No. 1174 - T-Bone Steaks—T-Bone steaks shall be prepared from a Short Loin - Item No. 173 - or a Short Loin, Short Cut - Item No. 174 - or a portion thereof. The flank edge on individual steaks shall be removed at a point which is not more than 3 inches from the outer tip of the loin eye muscle. The diameter of the tenderloin muscle shall be not less than 1/2 inch when measured through the center of the tenderloin, parallel with the backbone.

Item No. 1174B - T-Bone Steaks, Short Cut—This item is the same as Item No. 1174 except the flank edge on individual steaks shall be removed at a point which is not more than 1 inch from the outer tip of the loin eye muscle.

Item No. 1177 - Strip Loin Steaks, Bone-In, Intermediate—Intermediate strip loin steaks shall be prepared from a Strip Loin - Item No. 175. The flank edge on individual steaks shall be removed at a point which is not more than 3 inches from the outer tip of the loin eye muscle.

Item No. 1178 - Strip Loin Steaks, Boneless, Intermediate—Intermediate, boneless, strip loin steaks are prepared from a Strip Loin, Boneless - Item No. 176. The flank edge on individual steaks shall be removed at a point which is not more than 3 inches from the outer tip of the loin eye muscle.

Item No. 1179 - Strip Loin Steaks, Bone-In, Short Cut—This item is the same as Item No. 1177 except that the flank edge on individual steaks shall be removed at a point which is not more than 2 inches from the outer tip of the loin eye muscle.

Item No. 1179A - Strip Loin Steaks, Bone-In, Extra Short Cut—This item is the same as Item No. 1177 except the flank edge on individual steaks shall be removed at a point which is not more than 1 inch from the outer tip of the loin eye muscle.

Item No. 1179B - Strip Loin Steaks, Bone-In, Special—This item is the same as Item No. 1177 except the flank edge on individual steaks shall be removed at a point beyond the outer tip of the loin eye muscle which is not more than the specified thickness of surface fat.

Item No. 1180 - Strip Loin Steaks, Boneless, Short Cut—This item is the same as Item No. 1178 except the flank edge on individual steaks shall be removed at a point which is not more than 2 inches from the outer tip of the loin eye muscle.

Item No. 1180A - Strip Loin Steaks, Boneless, Extra Short Cut—This item is the same as Item No. 1178 except the flank edge on individual steaks shall be removed at a point which is not more than 1 inch from the outer tip of the loin eye muscle.

Item No. 1180B - Strip Loin Steaks, Boneless, Special—This item is the same as Item No. 1178 except the flank edge on individual steaks shall be removed at a point which is not more

than the specified thickness of surface fat from the outer tip of the loin eye muscle.

Item No. 1184 - Top Sirloin Butt Steaks—Top sirloin butt steaks shall be prepared from a Top Sirloin Butt - Item No. 184. The last steak on the round end of the top sirloin butt containing an excessive amount of ligaments and connective tissue shall be removed. The boneless top sirloin butt may be separated into sections reasonably parallel to the backbone line to accommodate the cutting of specified portion-size steaks. The sections shall be cut into steaks reasonably parallel to the cut surface resulting from separating the loin from the round.

Item No. 1184A - Top Sirloin Butt Steaks, Semi-Center Cut—Semi-center cut top sirloin steaks shall be prepared from a Top Sirloin Butt - Item No. 184. All muscles except the *longissimus dorsi*, *gluteus medius*, and the *biceps femoris* shall be removed. All other cutting and trimming requirements are those specified in Item No. 1184.

Item No. 1184B - Top Sirloin Butt Steaks, Center Cut—Center cut top sirloin butt steaks shall be prepared from a Top Sirloin Butt - Item No. 184. All muscles except the *gluteus medius* shall be removed. All other cutting and trimming requirements are those specified in Item No. 1184.

Item No. 1189 - Tenderloin Steaks—Tenderloin steaks shall be prepared from a Full Tenderloin - Item No. 189 or a portion thereof. The cut surface of the major tenderloin muscle at the butt end shall not be less than 1-1/2 inches at its narrowest diameter. The narrowest diameter of other steaks shall be not less than 1 inch exclusive of surface fat. On individual steaks when the side strip muscle and underlying fat are not firmly attached, these shall be removed. The individual steaks shall have not more than an average of 1/4 inch surface fat (1/2 inch maximum at any one point) on surfaces where fat is present.

Item No. 1189A - Tenderloin Steaks, Defatted—Defatted tenderloin steaks shall be prepared from a Tenderloin, Defatted - Item No. 189A - or any portion thereof. The cut surface of the major tenderloin muscle at the butt end shall not be less than 1-1/2 inches at its narrowest diameter. The narrowest diameter of other steaks shall not be less than 1 inch. On individual steaks when the side strip muscle and underlying fat are not firmly attached, these shall be removed.

Item No. 1190 - Tenderloin Steaks, Special—Special tenderloin steaks shall be prepared from a Full Tenderloin, Special - Item No. 190 - or a portion thereof. The cut surface of the major tenderloin muscle at the butt end shall not be less than 1-1/2 inches in its narrowest diameter. The narrowest diameter of other steaks shall be not less than 1 inch.

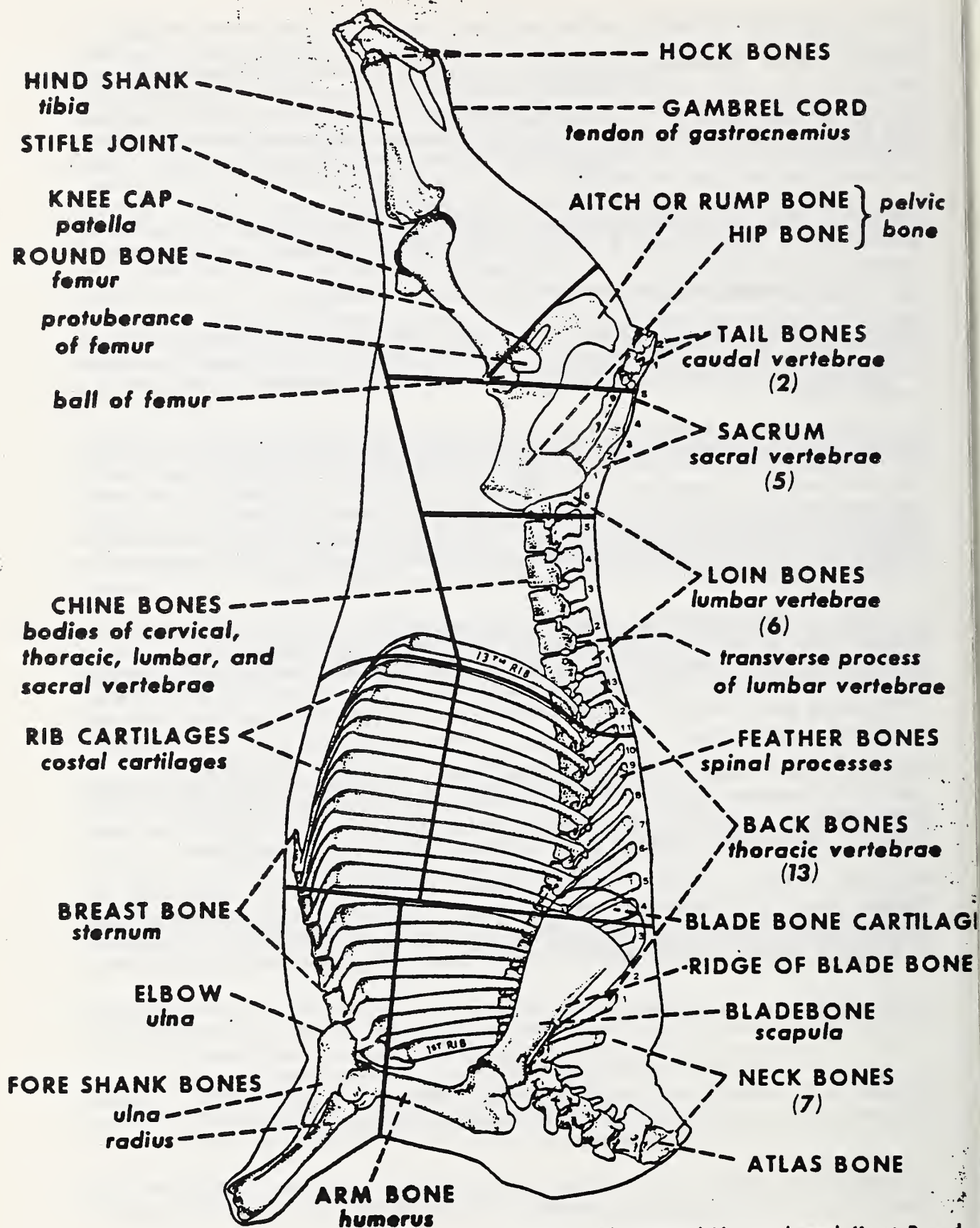
Item No. 1190A - Tenderloin Steaks, Skinned—Skinned tenderloin steaks shall be prepared from a Full Tenderloin, Skinned - Item No. 190A - or a portion thereof. The cut surface of the major tenderloin muscle at the butt end shall not be less than 1-1/2 inches in its narrowest diameter. The narrowest diameter of other steaks shall not be less than 1 inch.

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BEEF SKELETAL CHART

Location, Structure and Names of Bones



Courtesy of National Livestock and Meat Board

AMENDMENT NO. 1

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH BEEF APPROVED BY USDA EFFECTIVE JANUARY 1975

August 1978

This amendment is issued to correct some typographical errors, to add new items, and to make minor changes in several item descriptions.

Cover page, delete reference to "Agricultural Marketing Service, Livestock Division" and substitute "Food Safety and Quality Service, Meat Quality Division."

Page ii, GRADE, under "Ground Beef," third paragraph, line 2, add "a" between "than" and "minor."

Page iii, WEIGHT RANGE OR SIZE under "Ground Beef Patty Weight Tolerance," line 2, second sentence, delete "patients" and substitute "patties," line 3, add a comma after "3 ounces."

Page v, MATERIAL, second paragraph, line 3, delete "in their original shape" and substitute "are in approximately their original shape."

Page vi, INDEX OF PRODUCTS AND WEIGHT RANGE TABLE, add the following new items:

<u>"Item No.</u>	<u>Product</u>	<u>Range A</u>	<u>Range B</u>	<u>Range C</u>	<u>Range D</u>
100A	Carcass, Trimmed	475-575	575-675	675-775	775-up
100B	Carcass, Streamlined	335-400	400-470	470-600	600-up
102B	Forequarter, Steam-lined	91-110	110-128	128-147	147-up
113A	Square-Cut Chuck, Divided	66-79	79-93	93-106	106-up
116B	Chuck Tender	Under 1	1-3	3-up	
121B	Short Plate, Boneless, Special	8-12	12-14	14-16	16-up
121C	Skirt, Diaphragm	1-2	2-3	3-up	
121D	Skirt, Transversus Abdominis	1-3	3-4	4-up	
137A	Ground Beef, Special, TVP Added	Amount as specified"			

Item No. 121A, change weight ranges as follows:

"12-14 14-16 16-18 18-up"

Page vii INDEX OF PRODUCTS AND WEIGHT RANGE TABLE, add the following new items:

<u>Item No.</u>	<u>Product</u>	<u>Range A</u> Pounds	<u>Range B</u> Pounds	<u>Range C</u> Pounds	<u>Range D</u> Pounds
"155B	Hindquarter, Stream-lined	96-115	115-134	134-152	152-up

Item No. 167A, delete "Trimmed" and substitute "Special."

Page viii, INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE, add the following new items:

<u>Item No.</u>	<u>Product</u>	<u>Portion Size</u>
"1137A	Ground Beef Patties, Special TVP Added	Size as specified"

Page 1, Add the following new items:

"Item No. 100A - Carcass, Trimmed—This item is prepared from Item No. 100. All kidney and pelvic fat in excess of 1 inch shall be removed.

Item No. 100B - Carcass, Streamlined—This item consists of Item Nos. 102B and 155B.

Item No. 102B - Forequarter, Streamlined—This item is prepared from Item No. 102. The short plate shall be removed as described in Item No. 103. The brisket shall be removed as described in Item No. 117."

Item No. 107, line 5, after "vertebrae" delete "joins" and substitute "join."

Item No. 109, item name, after "Roast" add a hyphen. Last line, delete "typing" and substitute "tying."

Page 2, Item No. 109A, Item Name, after "Rib" add a comma and a hyphen between "Roast" and "Ready."

Item No. 109B, line 2, after "trapezius," add "subscapularis," delete "serratus ventralis" and substitute "rhomboideus."

Item No. 112A, line 2, delete "logissimum" and substitute "longissimus." Delete the last sentence and substitute "Portions of the 'lip' extending more than 2 inches beyond the outer tip of the ribeye muscle shall be removed."

After Item No. 113, add new item "Item No. 113A - Square-Cut Chuck Divided - This item is prepared from Item No. 113 by dividing the chuck into an arm portion and a blade portion by a straight cut perpendicular to the split surface of the backbone and parallel to the cut removing the brisket. This cut shall pass through the inner most curvature of the split surface of the backbone leaving not more than 1 inch of the ventral edge of the backbone on the arm portion."

Item No. 114, line 5, add the following new sentence:
"The shoulder clod may be removed from a square-cut chuck, an arm chuck, or a cross-cut chuck."

Page 3, Item No. 114A, line 9, add the following new sentence: "If necessary, additional roasts shall be made by cross-sectional cuts of the rolled and tied portion of the shoulder clod."

Item No. 116A, line 2, after "chuck cover," delete "the thin muscle (subscapularis) underlying the blade bone."

Line 6, after "immediately," delete the rest of the sentence and substitute "anterior to the end of the serratus ventralis muscle. The prescapular lymph gland and the fat surrounding this gland shall be removed."

After Item No. 116A, add the following new item:
"Item No. 116B - Chuck Tender - This item consists of the supraspinatus muscle lying along the dorsal side of the blade bone. It shall be removed without undue scoring."

Pages 3&4, Item No. 120, last line after "brisket," delete "and to within 1/2 inch of the lean lying between the hard fat and the border of the skin surface."

Page 4, After Item No. 121A, add the following new items:

"Item No. 121B - Short Plate, Boneless, Special--This item is the same as Item No. 121A except that the transversus abdominis muscle shall be removed.

Item No. 121C - Skirt Meat, Diaphragm--This item shall consist of the diaphragm muscle only. The serous membrane may remain attached.

Item No. 121D - Skirt Meat, Transversus Abdominis--This item shall consist of the transversus abdominis muscle only. The serous membrane shall be removed and the lean surface shall be trimmed practically free of fat."

Page 5, Item No. 132, line 4, after "...rib which is....," delete "less" and substitute "more."

Item No. 135, line 3, add to the second sentence the following: "except that that portion of the shoulder clod remaining on the foreshank may be utilized."

Page 6, After Item No. 135, add the following:

"NOTE: Diced beef and beef for stewing for delivery in the frozen state may be produced by the following methods: Properly prepared, previously accepted, boneless beef may be promptly frozen and subsequently made into diced beef or beef for stewing by sawing or by machine dicing. Frozen diced beef shall be packaged and packed and returned to the freezer prior to thawing.

For product produced from such frozen beef which requires 1 hour or more to produce, compliance with the piece size requirements may be determined under the online sampling plan as described in IMPS Item 135 or, as an alternative, filled shipping containers of the finished product may be examined under the stationary lot sampling plan included herein. Machine diced product produced from fresh-chilled beef may also be determined under the stationary lot sampling plan.

All examinations performed for specification requirement compliance under this stationary lot examination shall be done on a production lot basis. A production lot is (1) a quantity of finished product designated by the contractor as the unit for determining compliance with specification requirements of (2) that portion of a contractor designated production lot which the USDA meat grader designates as a unit for determining compliance if, in his opinion, that portion is or may be out of compliance with one or more specification requirements. In no case shall a production lot exceed the amount of finished product produced in a single workshift. Each production lot shall be identified in a manner satisfactory to the USDA meat grader and such identification shall appear on all shipping containers in the lot.

<u>Lot Size</u> <u>(pounds)</u>	<u>Sample Size</u> <u>(number of boxes)</u>	<u>Subsample Weight</u> <u>(approximately)</u>
Less than 1,000	2	2 lbs. 8 ozs.
1,001 - 2,000	4	" "
2,001 - 3,000	6	" "
3,001 - 4,500	8	" "
4,501 - 6,000	10	" "
6,001 - 8,000	12	" "
8,001 - 10,000	14	" "
More than 10,000	16	" "

One subsample shall be drawn from each randomly selected sample box. After withdrawal of subsamples, the contractor shall make correct fills on the boxes sampled. Diced beef shall be completely thawed prior to examination. Water shall not come in contact with the meat during thawing. Thawed diced beef shall not be included in the lot. Acceptance criteria shall be the same as specified in IMPS Item No. 135. Failure of the sample to comply with the piece size requirements will cause rejection of the entire lot.

For product produced from frozen beef which requires less than 1 hour to produce, the grader shall follow the applicable procedure specified in the IMPS Item No. 135 for chilled product produced by machine dicing.

Page 6, Item No. under Fat Content, line 6, delete "AMS" and substitute "FSQS," line 7, delete "Analyses" and substitute "Analysis"

Page 7, Withdrawing Samples for Chemical Analysis, line 7, delete "AMS" and substitute "FSQS."

After Item No. 137, add the following new item:

"Item No. 137A - Ground Beef, Special, TVP Added--This item is the same as Item No. 137 except that textured vegetable protein (TVP) may be hydrated and added as described in Item No. 136A"

After Item No. 155A, add the following new item:

"Item No. 155B - Hindquarter, Streamlined--This item is prepared from Item No. 155. The flank shall be removed by a cut which begins on the inside round at a point on an imaginary straight line between the anterior end of the kneecap (patella) and the center of the split surface of the aitch bone. This cut shall follow the curvature of the underlying muscles to the ventral fold of the flank exposing the prefemoral lymph gland. The cut shall then continue in a straight line perpendicular to the outside surface from the exposed prefemoral lymph gland through a point on the 13th rib which is not more than 10 inches from the center of the protruding edge of the 13th thoracic vertebra. The flank shall then be removed by sawing through the 13th rib.

Page 8, Item No. 159, line 6, add the following new sentence: "The fat and lean lying above the sacrosiatic ligament and over the pelvic side of the aitch bone shall be removed."

Page 9, Item No. 170, line 3, delete the second sentence and substitute the following: "All the opaque heavy connective tissue along the side of the bottom round adjacent to the knuckle shall be removed."

Pages 11 & 12, Item No. 189 and all subsequent tenderloin items, add the following new sentence: "Separation of the thin end of the major tenderloin muscle (psoas major) 'split tails' may be removed by a straight cut perpendicular to the boned surface and at an approximate right angle to the long axis of the tenderloin. When such removal occurs, the fat trimming requirements shall apply to the remaining portion of the tenderloin."

In the last sentence of each item description relating to scores, after "1/2 inch in depth" insert "into the lean."

Page 13 Item No. 1136A, line 2, delete "is" and substitute "it."

After Item No. 1137, add the following new item:

"Item No. 1137A - Ground Beef Patties, Special, TVP Added--This item is the same as Item No. 1136 except that it shall be prepared from Ground Beef, Special, TVP Added - Item No. 137A.


Page 14 Item No. 1173A, line 2, after "which" add "is."

After Item No. 1174, add the following new item:

"Item No. 1174A - T-Bone Steaks, Intermediate--This item is the same as Item No. 1174 except the flank edge on individual steaks shall be removed at a point which is not more than 2 inches from the outer tip of the loin eye muscle."

Page 15 Item No. 1189, Item name, delete "Tenderlon" and substitute "Tenderloin."

This amendment is effective September 3, 1978.


Acting Director, Meat Quality Division

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH BEEF
APPROVED BY USDA EFFECTIVE JANUARY 1975

DECEMBER 1978

This amendment is being issued to: (1) add new items and make minor changes in the specification and (2) to revise Item No. 155B which was incorrectly described in Amendment No. 1.

Page iii, WEIGHT RANGE OR SIZE under "Portion Cut Items," line 6, after "...should be...." add "approximately the same as."

Page v, MATERIAL, add a third paragraph, "When an item description includes reference to another item(s), this does not imply that the referenced item(s) must be prepared before the item described, if the specification requirements can be determined. (For example, Item No. 109, Roast-Ready Rib, can be examined for specification compliance without first seeing the referenced Item No. 103, Primal Rib.)"

Page vi, INDEX OF PRODUCTS AND WEIGHT RANGE TABLE, add the following new items:

<u>Item No.</u>	<u>Product</u>	<u>Range A</u>	<u>Range B</u>	<u>Range C</u>	<u>Range D</u>
104	Rib, Oven-Prepared, Regular	19-22	22-26	26-30	30-up
155C	Hindquarter, Trimmed	110-132	132-155	155-178	178-up"

Page 1, add the following new item:

"Item No. 104 - Rib, Oven-Prepared, Regular--The oven-prepared rib is prepared from a Rib, Primal - Item No. 103. A straight cut is made across the ribs from a point on the 12th rib which is not more than 4 inches from the outer tip of the ribeye muscle through a point on the 6th rib which is not more than 8 inches from the outer tip of the ribeye muscle. The chine bone shall be removed by a straight cut along a line at which the vertebrae join the feather bones exposing the lean but leaving the feather bones attached to the oven-prepared rib. The blade bone and related cartilage shall be removed."

Item No. 109, line 7, after "...and related cartilage...." add "practically," line 8, after "... the bladebone, and" add "practically all of."

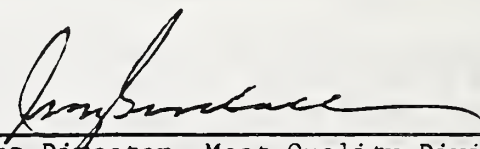
Amendment No. 1, page 5, Item No. 155B - Hindquarter, Streamlined, revise the description to read as follows:

"Item No. 155B - Hindquarter, Streamlined--This item is prepared from Item No. 155. The flank shall be removed by a cut which begins on the inside round at a point on an imaginary straight line between the anterior end of the kneecap (patella) and the center of the split surface of the aitch bone. This cut shall follow the curvature of the underlying muscles to the ventral fold of the flank exposing the pre-femoral lymph gland. The cut shall then continue in a straight line perpendicular to the outside surface from the exposed prefemoral lymph gland through a point on the 13th rib which is not more than 10 inches from the center of the protruding edge of the 13th thoracic vertebra. The flank shall then be removed by sawing through the 13th rib. All kidney and pelvic fat in excess of 1 inch shall be removed."

Page 7, add the following new item:

"Item No. 155C - Hindquarter, Trimmed--This item is the same as Item No. 155 except that all kidney and pelvic fat in excess of 1 inch shall be removed."

This amendment is effective immediately.



Acting Director, Meat Quality Division

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Livestock Division
Meat Grading and Certification Branch
Washington, D.C. 20250

MGC NOTICE 85-2

AVAILABLE TO INDUSTRY

ACTION BY: Supervisors and Meat Graders


Vegetable Protein Product Added to IMPS Ground Beef Items

The Standardization and Review Branch has clarified the intended use of Textured Vegetable Protein (TVP) when included in the IMPS item descriptions for ground beef products. The hydration ratio stated in the IMPS--1 part TVP to no more than 1.5 parts water--was included to achieve a yield of 18 percent protein in the hydrated TVP. Currently, there are other types of Vegetable Protein Products (VPP) approved by the Food and Nutrition Service (FNS) which require different amounts of water for proper hydration to yield 18 percent protein. Consequently, the use of any VPP is authorized for IMPS items provided it meets FNS regulations and is hydrated using the following formula:

$$\frac{\text{Percent protein in VPP (as is basis)}}{18} - 1 = X$$

X = Maximum pounds of water to be
added to each pound of dry product

In addition, the requirement to use caramel coloring and beef flavoring shall not be applicable unless specified by the buyer. These changes will be reflected in the forthcoming revision of IMPS 100 for Fresh Beef.


EUGENE M. MARTIN, Chief
Meat Grading and Certification Branch
Livestock Division

DISTRIBUTION: MGC-3 Supervisors and Graders	OPI: MGC Br.	RETENTION: File this Notice until superseded.	Page 1 10/25/84
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**INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS
FOR FRESH LAMB AND MUTTON
APPROVED BY USDA**

These specifications contain descriptions of various fresh lamb and mutton products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs, these specifications must be used with "Institutional Meat Purchase Specifications General Requirements" which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef; Fresh Veal and Calf; Fresh Pork; Cured, Cured and Smoked, and Fully-Cooked Pork Products; Cured, Dried and Smoked Beef Products; Edible By-Products; and Sausage Products. Copies of specifications for these products may be purchased from the Superintendent of Documents.

UNITED STATES DEPARTMENT OF AGRICULTURE

**Agricultural Marketing Service
Livestock Division
Washington, D.C.**

EFFECTIVE JANUARY 1975

ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER

GRADE

Carcasses, Saddles, and Cuts - The purchaser shall specify a quality grade and may also specify a yield grade except that when surface fat thickness is included in the item description, yield grade shall not be specified.

Roasts - The purchaser shall specify a quality grade and may also specify a yield grade.

Portion Cuts and Lamb for Stewing - The purchaser shall specify a quality grade.

Ground Lamb - The purchaser shall specify a quality grade.

Yield Grades 1 through 5 are applicable to all quality grades. However, those yield grades indicated by an "X" are in the largest supply.

USDA GRADES

Quality Grades	Yield Grades ¹				
	1	2	3	4	5
U.S. Prime ²			X	X	X
U.S. Choice		X	X	X	
U.S. Good	X	X	X		
U.S. Utility	X	X			
U.S. Cull	X	X			

¹The yield grades reflect differences in yields of boneless, closely trimmed, retail cuts. As such, they also reflect differences in the overall fatness of carcasses and cuts. Yield Grade 1 represents the highest yield of retail cuts and the least amount of fat trim. Yield Grade 5 represents the lowest yield of retail cuts and the highest amount of fat trim.

²Prime does not apply to mutton.

CLASS

A - Lamb

B - Yearling Mutton

C - Mutton

WEIGHT RANGE OR SIZE

Carcasses, Saddles, and Cuts: See weight range table.

Roasts: See weight range table. If desired, purchasers may specify that roasts be further reduced in size.

Ground Lamb Patties: Either the individual patty weight or the number of patties per pound must be specified.

Ground Lamb Patty Weight Tolerances

For patties with a specified weight of 3 ounces or less, a tolerance of ± 2 patties from the projected number in a 10-pound unit will be permitted. For patties with a specified weight or more than 3 ounces a tolerance of ± 1 patty from the projected number in a 10-pound unit will be permitted. (When patties are specified by a number per pound, this shall be converted to patty weight to determine tolerances, i.e., 6 to the pound = 2.67 ozs.) For example:

Specified Size		Number Per 10-Pound Unit	Tolerance (over and under)
Weight	No. Per Pound		
1.6 oz.	10	100	2
2.0 oz.	8	80	2
3.2 oz.	5	50	1
4.0 oz.	4	40	1

Example: When 2 ounce patties are specified, 10-pound units containing 78-82 patties are acceptable.

Portion Cut Items: *Either* the portion weight or thickness desired—*not both*—must be specified. If weight is specified, see the weight range table. If thickness is specified, the actual thickness desired must be indicated. Also, in order to control uniformity of portion sizes, the weight range of the IMPS cut from which the portions are to be produced may also be specified. In this case, the fat thickness of the IMPS cut should be approximately the same as the fat thickness specified for the portion cut.

Portion Cut Weight Tolerances:

If portion weight is specified, the following tolerances will be permitted:

Weight Specified	Tolerances (over and under)
less than 6 ozs.	1/4 oz.
6 ozs. or more	1/2 oz.

Example: When 4-ounce chops are specified, individual chops weighing 3-3/4 to 4-1/4 ounces are acceptable.

Portion Cut Thickness Tolerances:

If thickness is specified, the following tolerances will be permitted:

Thickness Specified	Tolerances (over and under)
1 inch or less	3/16 inch
More than 1 inch	1/4 inch

Example: When 1-1/4-inch chops are specified, individual chops measuring 1 to 1-1/2 inches are acceptable.

FAT LIMITATIONS

Chops:

Unless otherwise specified by the purchaser, surface fat, where present, must not exceed an average of 1/4 inch in thickness and the thickness at any one point must not be more than 3/8 inch.

STATE OF REFRIGERATION

- A. Chilled
- B. Frozen

TYING

When tying is required, roasts must be made firm and compact and held intact by individual loops of strong twine uniformly spaced at approximately 2-inch intervals girthwise. In addition, some roasts may require tying lengthwise. In lieu of string tying, it is permissible to enclose roasts in a stretchable netting or by any other equivalent method.

Purchasers may specify that roasts be tied when this requirement is not specified in the detailed roast item specification.

MATERIAL

Unless otherwise specified, the wholesale and fabricated cuts described in these specifications are double cuts. Single cuts are produced by cutting lengthwise centrally through the backbone. Cuts which have been excessively trimmed in order to meet specified weights or which do not meet the specification requirements for any reason are not acceptable. The meat shall be of good color normal to the class, be practically free of bruises, blood clots, bone dust, ragged edges, and discoloration. Except as otherwise provided herein, the meat shall show no evidence of mishandling and shall be in excellent condition to the time of delivery.

CUTTING CHOPS

Unless otherwise specified in the individual item specification, chops shall be cut in full slices in a straight line reasonably perpendicular to the outer surface and at an approximate right angle to the length of the meat cut from which chops are produced.

BONING

Boning shall be accomplished with sufficient care to allow each cut to retain its identity and to avoid objectionable scores in the meat.

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Range A		Range B		Range C		Range D	
		Lamb	Mutton	Lamb	Mutton	Lamb	Mutton	Lamb	Mutton
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
200	Carcass	30-41	55-75	41-53	75-95	53-65	95-115	65-75	115-130
202	Foresaddle	15-21	28-38	21-27	38-48	27-33	48-58	33-38	58-65
203	Bracelet (Double)	5-6	8-11	6-8	11-14	8-10	14-17	10-12	17-19
204	Rib Rack (Double)	3-5	6-8	5-6	8-10	6-7	10-13	7-8	13-14
205	Chucks and Plates (Double)	12-16	22-30	16-21	30-38	21-26	38-46	26-30	46-52
206	Chucks (Double)	11-14	19-26	14-19	26-33	19-23	33-40	23-27	40-46
207	Square-Cut Shoulders (Double)	8-10	14-19	10-13	19-24	13-16	24-29	16-19	29-33
208	Square-Cut Shoulder, Boneless	3-4	6-8	4-6	8-10	6-7	10-12	7-8	12-16
209	Breast, Flank On	4-6	8-11	6-7	11-13	7-9	13-16	9-11	16-18
209A	Breast, Flank Off	3-5	7-10	5-6	10-12	6-8	12-16	8-10	16-18
210	Foreshank	1-1.5	2-3	1.5-2	3-4	2-2.5	4-5	2.5-3	5-6
230	Hindsaddle	15-21	28-38	21-27	38-48	27-33	48-58	33-38	58-65
231	Loin (Double)	5-6	8-11	6-8	11-14	8-10	14-17	10-12	17-20
232	Loin, Trimmed (Double)	3-4	6-8	4-5	8-10	5-7	10-12	7-8	12-15
233	Leg (Double)	11-14	19-26	14-19	26-33	19-23	33-40	23-27	40-46
233A	Leg, Lower Shank Off (Single)	5-7	9-12	7-9	12-15	9-12	15-19	12-Up	19-Up
233B	Leg, Lower Shank Off, Boneless	4-6	8-11	6-8	11-13	8-11	13-17	11-Up	17-Up
233C	Leg, Shank Off (Single)	5-7	8-10	7-9	10-12	9-12	12-15	12-Up	15-Up
233D	Leg, Shank Off, Boneless	4-6	7-9	6-8	9-11	8-11	11-14	11-Up	14-Up
233E	Hindshank, Heel Attached	Under 1	1-1.5	1-2	1.5-3	2-Up	3-Up		
234	Leg, Oven-Prepared	4-6	8-10	6-8	10-13	8-9	13-16	9-11	16-18
234A	Leg, Oven-Prepared, Boneless, & Tied								
235	Back	9-12	17-23	12-16	23-29	16-20	29-35	20-23	35-39
236	Back, Trimmed	6-8	11-15	8-11	15-19	11-13	19-23	13-15	23-26
237	Hindsaddle, Long Cut	20-27	36-49	27-34	49-62	34-42	62-75	42-49	75-85
238	Hindsaddle, Long Cut, Trimmed	17-23	33-41	23-29	41-52	29-36	52-63	36-41	63-72

NOTE: When single chucks, backs, etc., are specified, their respective weights must be one-half of that prescribed for double cuts in the table. The weight range of cuts shown in the above table do not necessarily reflect any relation to the carcass weight ranges. Studies have shown that all carcasses within a given weight range will not produce cuts that are uniform in weight. Therefore, in ordering cuts, purchasing officials should specify the weight ranges(s) desired without regard to the carcass weights shown in the various ranges.

INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Portion Size							
		3 ozs.	4 ozs.	5 ozs.	6 ozs.	7 ozs.	8 ozs.	9 ozs.	10 ozs.
1204	Rib Chops	X	X	X	X	X	X	X	X
1204A	Rib Chops, Frenched	X	X	X	X	X	X		
1207	Shoulder Chops.....		X	X	X	X	X		
1232	Loin Chops		X	X	X	X	X	X	X
1295	Lamb for Stewing ¹	Amount As Specified							
1296	Ground Lamb ¹	Amount As Specified							
1296A	Ground Lamb Patties	Size As Specified							

NOTE: Because it is impractical to list all portion weights that purchasers may desire, those identified by the letter "X" are suggested only. Other portion weights may be specified if desired.

¹May also be prepared from yearling mutton or mutton as specified, in which case the appropriate name—Ground yearling mutton, etc.—shall apply.

DETAILED REQUIREMENTS

Item No. 200 - Carcass—A lamb, yearling mutton, or mutton carcass is the entire unsplit carcass. The spleen, bloody tissue and frayed ends at the neck and practically all heart fat shall be removed. The diaphragm and the hanging tender may be removed.

Item No. 202 - Foresaddle—The foresaddle is the anterior portion of the carcass after severance from the hindsaddle by cutting between the 12th and 13th ribs, the 13th rib remaining with the hindsaddle. Bloody tissue and frayed ends at the neck and practically all heart fat shall be removed.

Item No. 203 - Bracelet—The bracelet is prepared from Item No. 202 and consists of the rib rack and plates intact. The chucks shall be separated from the bracelet by a reasonably straight cut across the foresaddle between the 4th and 5th ribs.

Item No. 204 - Rib Rack—The rib rack is prepared from Item No. 203. The plates shall be separated from the rack by a straight cut across the ribs which is not more than 4 inches from the outer tip of the ribeye muscle.

Item No. 205 - Chucks and Plates—The chucks and plates are that portion of the foresaddle remaining after the removal of the Rib Rack - Item No. 204.

Item No. 206 - Chucks—The chucks are that portion of the foresaddle remaining after the removal of the Bracelet - Item No. 203.

Item No. 207 - Square Cut Shoulders—The shoulders are prepared from Item No. 206 and are obtained by two straight cuts perpendicular to the outer skin surface. The first cut passes through the cartilaginous juncture of the first rib and the anterior extremity of the sternum continuing in a straight line to the 4th rib perpendicular to the cut separating the chucks from the bracelet (this cut severs the foreshanks and briskets from the shoulders). The neck shall be removed by a second straight cut perpendicular to the neck which leaves not more than 1 inch of neck on the shoulders.

Item No. 208 - Square Cut Shoulders, Boneless and Tied—The boneless and tied shoulder is prepared from one-half of Item No. 207. Boning shall be done by scalping the rib and backbones. The bladebone shall be removed without cutting through the flesh at the ridge of the bladebone so as to leave the shoulder meat, including the clod, intact. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, and the prescapular lymph gland and surrounding fat in excess of 1/2 inch in thickness shall be removed. The boneless shoulder shall be rolled with the eye muscle lengthwise of the roll and shall be tied girthwise and lengthwise.

Item No. 209 - Breast, Flank On—The breast shall include the flank, plate, and brisket portions intact.

Item No. 209A - Breast, Flank Off—This item is the same as Item No. 209 except that the flank portion shall be excluded.

Item No. 210 - Foreshank—The foreshank is the foreleg portion remaining intact with the brisket after removal from the chucks in making Square Cut Shoulders - Item No. 207. The foreshank is separated from the brisket by a cut following the natural seam except that part of the web muscle may remain on the foreshank. The lower shank bones shall be removed at the knee.

Item No. 230 - Hindsaddle—The hindsaddle is the posterior portion of the carcass remaining after the removal of the Foresaddle - Item No. 202.

Item No. 231 - Loin—This item is the anterior portion of Item No. 230. It is separated from the legs by a straight cut perpendicular to the outer skin surface and perpendicular to the backbone through a point immediately anterior to the hipbone cartilage.

Item No. 232 - Loin, Trimmed—The trimmed loin is prepared from Item No. 231. The flank portions shall be removed by a straight cut which is not more than 4 inches from the outer tip of the loin eye muscle. The kidney knobs shall be removed and the lumbar fat shall be trimmed so that it does not exceed 1/2 inch in thickness at the end. The fat must then be tapered down to the lean surface at a point not beyond 3/4 of the length of the loin.

Item No. 233 - Legs—The legs are that portion of the hindsaddle remaining after the removal of the Loin - Item No. 231.

Item No. 233A - Leg, Lower Shank Off (Single)—This item is prepared from one-half of Item No. 233. The lower hind shank bones shall be removed at the break joint and the gambrel cord shall be removed.

Item No. 233B - Leg, Lower Shank Off, Boneless—This item is the same as Item No. 233A except that it shall be made boneless. The round bone shall be removed after making a cut along the natural seam between the inside and knuckle. The kneecap and surrounding heavy connective tissue shall be removed. The boneless leg shall be tied girthwise and lengthwise.

Item No. 233C - Leg, Shank Off (Single)—This item is prepared from one-half of Item No. 233. The shank and the heel portion of the leg shall be removed by a straight cut, approximately perpendicular to the outer skin surface and to the long axis of the shank bones, which passes through the stifle joint.

Item No. 233D - Leg, Shank Off, Boneless—This item is the same as Item No. 233C except that it shall be made boneless. The round bone shall be removed after making a cut along the natural seam between the inside and knuckle. The kneecap and surrounding heavy connective tissue shall be removed. The boneless leg shall be tied girthwise and lengthwise.

Item No. 233E - Hindshank, Heel Attached—This item is the shank with heel portion attached that is removed from the leg in preparing Item No. 233C. The lower hindshank bones shall be removed at the break joint and the gambrel cord shall be removed.

Item No. 234 - Leg, Oven-Prepared, Partially Boneless—The oven-prepared leg is prepared from one-half of Item No. 233. The pelvic, back, and tail bones shall be removed. The flank, practically all cod or udder fat, and surface fat in excess of 1/2 inch shall be removed. The shank shall be removed by a cut along the natural seam between the shank meat and the heel (gastrocnemius muscle) and through the stifle joint.

Item No. 234A - Leg, Oven-Prepared, Boneless and Tied—This item is the same as Item No. 234 except that it shall be made boneless. The round bone shall be removed after making a cut along the natural seam between the inside and the knuckle. The kneecap and surrounding heavy connective tissue shall be removed. The boneless leg shall be tied girthwise and lengthwise.

Item No. 235 - Back—The back is that portion of the carcass remaining after removal of the Chucks - Item No. 206 and the Legs - Item No. 233.

Item No. 236 - Back, Trimmed—The trimmed back is prepared from Item No. 235. The plates and flanks are removed by a straight cut which is not more than 4 inches from the outer tip of the loin eye muscle. The kidney knobs must be removed and the lumbar fat must be trimmed so that it does not exceed 1/2 inch in thickness at the leg end. The fat shall be tapered down to the lean surface at a point not beyond 3/4 of the length of the loin.

Item No. 237 - Hindsaddle, Long Cut—The long cut hindsaddle is that portion of the carcass remaining after removal of the Chucks - Item No. 206.

Item No. 238 - Hindsaddle, Long Cut, Trimmed—The trimmed, long cut hindsaddle is the Legs - Item No. 233-and the Back, Trimmed - Item No. 236 - portions of the carcass intact.

DETAILED REQUIREMENTS FOR PORTION-CUT PRODUCTS

Item No. 1204 - Rib Chops—Rib chops shall be prepared from a single Rib Rack - Item No. 204. The plate portion on individual chops shall be removed at a point which is not more than 3 inches from the outer tip of the ribeye muscle. The protruding edge of the chine bone shall be removed by sawing at a approximate 45 degree angle to the split thoracic vertebrae beginning at the dorsal edge of the spinal cord groove. Chops cut from the bladebone section shall have the bladebone and related cartilage and the muscles and fat overlying the level of the bladebone and cartilage removed. Rib chops shall have the fell removed.

Item No. 1204A - Rib Chops, Frenched—Frenched rib chopsshall be prepared as described in Item No. 1204. In addition, individual chops shall have the meat, including the rib fingers, removed (frenched) to expose at least one and one-half inches of the end of one rib bone. Chops having more than one rib bone shall have the rib bone nearest the center of the chop frenched and the other rib bone shall be removed for the distance that the frenched rib bone is exposed. The frenched rib chops shall have the fell removed.

Item No. 1207 - Shoulder Chops—Shoulder Chops shall be prepared from both the arm and bladebone sections of a single Shoulder - Item No. 207. Armbone shoulder chops shall be cut first and must be cut reasonably parallel to the normal line of separation of the shank from the shoulder up to the knuckle. Armbone chops shall have the rib bones and intercostal meat removed. In addition, the underlying fat in excess of 1/4 inch also shall be removed. Blade chops shall be cut approximately parallel to the rib bones up to the knuckle.

Item No. 1232 - Loin Chops—Loin chops shall be prepared from a single Loin, Trimmed - Item No. 232. The flank edge on individual chops shall be removed at a point which is not more than 3 inches from the outer tip of the loin eye muscle. Loin chops shall contain no portion of the hipbone. However, a portion of the 13th rib may be present in chops cut from the rib end. Loin chops shall have the fell removed.

Item No. 1295 - Lamb for Stewing—This item may be prepared from any combination of carcasses or cuts which will produce lamb for stewing complying with the end product requirements. Meat from shanks is not acceptable. Meat with dark discoloration and all bones, cartilage, backstrap, exposed large blood vessels, and the prescapular lymph gland shall be removed. Prior to dicing, the meat shall be trimmed in such a manner that surface and seam fat shall not exceed 1/4 inch in thickness at any point. In addition, the fat content of the meat, determined visually, shall not exceed 20 percent. After being prepared as described above, the boneless meat shall be hand diced or processed through a dicing machine (grinding not permitted.). Not less than 75 percent, by weight, of the resulting pieces shall be of a size which is the equivalent of not less than a 1/2 inch cube or more than a 1-1/4 inch cube and no individual surface on these pieces shall exceed 2-1/2 inches in length. (When specified, this item may be prepared from yearling mutton or mutton. In which case the name shall be changed to yearling mutton or mutton, as applicable.)

Item No. 1296 - Ground Lamb—Ground Land may be prepared from any combination of carcasses or cuts. Meat with dark discoloration, all bones, cartilage, backstrap, backstrap, exposed large blood bessels, and the prescapular lymph gland shall be removed. The visual fat content of the boneless meat, determined prior to grinding, shall not exceed 25 percent. After being prepared as described above, the boneless meat shall be ground at least once

through a plate having holes no larger than 3/4 inch in diameter (or it may be otherwise reduced in size provided the texture and appearance of the product after final grinding is typical of ground lamb prepared by grinding only.) Final grinding shall be through a plate having holes 1/8 inch in diameter.

The meat shall be thoroughly blended prior to and subsequent to each reduction in size except that the ground lamb shall not be mixed after the final grinding. The boneless meat shall not exceed 50°F. during grinding and packaging. The ground lamb shall be packaged and packed in the amount specified by the purchaser and packed immediately upon completion of grinding. (When specified, this item may be prepared from yearling mutton or mutton, in which case the name shall be changed to yearling mutton or mutton, as applicable.)

Item No. 1296A - Ground Lamb Patties—This product shall be prepared from Item No. 1296. The ground meat shall be mechanically formed into round patties of the size specified. They shall be arranged in stacks with each patty separated from adjacent patties by two sheets of waxed patty paper; except that, when patties are individually quick frozen, the patty paper may be excluded. When producing patties to be delivered frozen, frozen boneless meat previously accepted in the fresh state, may be used. (When specified, this item may be prepared from yearling mutton or mutton. In which case, the name shall be changed to yearling mutton or mutton, as applicable.)

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS

FOR FRESH VEAL AND CALF

APPROVED BY USDA

These specifications contain descriptions of various veal and calf products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs these specifications must be used with "Institutional Meat Purchase Specifications General Requirements" which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef; Fresh Lamb and Mutton; Fresh Pork; Cured, Cured and Smoked, and Fully-Cooked Pork Products; Cured, Dried and Smoked Beef Products; Edible By-Products; and Sausage Products. Copies of specifications for these products may be purchased from the Superintendent of Documents.

UNITED STATES DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service
Livestock Division
Washington, D.C.

Effective July 1975

ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER

GRADE

U.S. Prime
U.S. Choice

U.S. Good
U.S. Standard

U.S. Utility

CLASS

A - Veal
B - Calf

WEIGHT RANGE OR SIZE

Carcasses, Sides, Saddles, and Cuts: See weight range table.

Roasts: See weight range table. If desired, purchasers may specify that roasts be further reduced in size.

Patties: Either the individual patty weight or the number of patties per pound may be specified.

Patty Weight Tolerance

For patties with a specified weight of 3 ounces or less, a tolerance of ± 2 patties from the projected number in a 10-pound unit will be permitted. For patties with a specified weight of more than 3 ounces a tolerance ± 1 patty from the projected number in a 10-pound unit will be permitted. (When patties are specified by a number per pound, this shall be converted to patty weight to determine tolerances, i.e., 6 to the pound = 2.67 ozs.) For example:

Specified Size		Number Per 10-Pound Unit	Tolerances (Over and Under)
Weight	No. Per Pound		
1.6 oz	10	100	2
2.0 oz	8	80	2
3.2 oz	5	50	1
4.0 oz	4	40	1

Example: When 2-ounce patties are specified, 10-pound units containing 78-82 patties are acceptable.

Portion Cut Items: *Either* the portion weight or thickness desired—not both—must be specified. If weight is to be specified, see the weight range table. If thickness is specified, the actual thickness desired must be indicated. (Thickness requirement not applicable to cubed steaks or cubed cutlets.) Also, in order to control uniformity of portion sizes, the weight range of the IMPS cut from which the portions are to be produced also may be specified.

Portion Cut Weight Tolerances:

If portion weight is specified, the following tolerances will be permitted:

Weight Specified	Tolerances (over and under)
less than 6 ozs.	1/4 oz.
6 ozs. but less than 12 ozs.	1/2 oz.

Example: When 4-ounce chops are specified, individual chops weighing 3-3/4 to 4-1/4 ounces are acceptable.

Portion Cut Thickness Tolerances:

If thickness is specified, the following tolerances will be permitted:

Thickness Specified	Tolerances (over and under)
1 inch or less	3/16 inch
More than 1 inch	1/4 inch

Example: When 1-1/4 inch chops are specified, individual chops measuring 1 to 1-1/2 inches are acceptable.

STATE OF REFRIGERATION

- A. Chilled
- B. Frozen

TYING

When tying is required, roasts must be made firm and compact and held intact by individual loops of strong twine uniformly spaced at approximate 2-inch intervals girthwise. In addition, some roasts may require tying lengthwise. In lieu of string tying, it is permissible to enclose roasts in a stretchable netting or by any other equivalent method. Purchasers may specify that roasts be tied when this requirement is not specified in the detailed item specification.

MATERIAL

Veal and calf products described in these specifications must be derived from carcasses, sides, saddles, quarters, or wholesale cuts. Unless otherwise specified, the wholesale and fabricated cuts described in these specifications are double cuts. Single cuts are produced by cutting lengthwise centrally through the backbone. Cuts which have been excessively trimmed in order to meet specified weights or which do not meet the specification requirements for any reason are not acceptable.

The meat shall be of good color, normal to the class, be practically free of bruises, blood clots, bone dust, ragged edges, and discoloration. The spinal cord (applicable only to single cuts and

portion-cut items), thymus glands, and heart fat must be removed. Except as otherwise provided herein, the meat shall show no evidence of freezing or defrosting. Also, the product shall show no evidence of mishandling and shall be in excellent condition to the time of delivery.

Portion cut items to be delivered frozen may be produced from frozen meat cuts which have been previously accepted in the fresh-chilled state provided such cuts are in excellent condition and in their original shape. Products thus produced shall be packaged, packed, and promptly returned to the freezer.

CUTTING CHOPS

Unless otherwise specified in the individual item specification, chops shall be cut in full slices in a straight line reasonably perpendicular to the outer surface and at an approximate right angle to the length of the meat cut from which they are produced.

BONING

Boning shall be accomplished with sufficient care to allow each cut to retain its identity and to avoid objectionable scores in the meat.

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Range A		Range B		Range C		Range D	
		Veal	Calf	Veal	Calf	Veal	Calf	Veal	Calf
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
300	Carcass	60-90	125-175	90-140	175-225	140-175	225-275	175-225	275-350
303	Side	30-45	63-88	45-70	88-113	70-88	113-138	88-113	138-175
303A	Side, 2 Rib Hind- quarter	30-45	63-88	45-70	88-113	70-88	113-138	88-113	138-175
303B	Side, 1 Rib Hind- quarter	30-45	63-88	45-70	88-113	70-88	113-138	88-113	138-175
303C	Side, Boneless	23-38	48-77	38-54	77-86	54-67	86-106	67-86	106-135
304	Foresaddle, 11 Ribs	29-44	61-86	44-69	86-112	69-86	112-137	86-111	137-175
304A	Foresaddle, 12 Ribs	31-46	64-89	46-71	89-115	71-88	115-140	88-113	140-178
305	8-ribelet, 7 Ribs (Double)	6-11	13-18	11-15	18-23	15-19	23-28	19-24	28-35
305A	8-ribelet, 7 Ribs (Double)	6-11	13-18	11-15	18-23	15-19	23-28	19-24	28-35
306	Hotel Rack, 7 Ribs (Double)	5-9	9-14	9-12	14-18	12-14	18-22	14-18	22-28
306A	Hotel Rack, 7 Ribs (Double)	5-9	9-14	9-12	14-18	12-14	18-22	14-18	22-28
308	Chucks, 4 Ribs (Double)	22-40	50-71	40-56	71-90	56-70	90-110	70-90	110-141
308A	Chucks, 5 Ribs (Double)	23-41	52-73	41-57	73-93	57-72	93-114	72-92	114-145
309	Square Cut, Chucks, 4 Ribs, (Double)	11-20	25-36	20-28	36-45	28-36	45-55	36-47	55-72
309A	Square Cut Chucks, 5 Ribs, (Double)	12-21	27-40	21-29	40-51	29-37	51-63	37-48	63-80
309B	Square Cut Chuck 4 Ribs, Boneless	10-19	23-33	19-26	33-41	26-33	41-51	33-43	51-65
309C	Square Cut Chuck, 5 Ribs, Boneless	11-20	25-35	20-27	35-43	27-34	43-53	34-45	53-67
309D	Square Cut Chuck, Neck Off, 4 Ribs, Boneless & Tied	9-18	22-32	18-25	32-39	25-32	39-49	32-42	49-63
309E	Square Cut Chuck, Neck Off, 5 Ribs, Boneless & Tied	10-19	24-34	19-26	34-42	26-33	42-52	33-44	52-66
310	Shoulder Clod	2-4	5-7	4-5	7-8	5-7	8-10	7-9	10-12
310A	Shoulder Clod, Special	2-4	5-7	4-5	7-8	5-7	8-10	7-9	10-11
310B	Shoulder Clod Roast	2-4	5-7	4-5	7-8	5-7	8-10	7-9	10-11
311	Square Cut Chuck, 4 Ribs, Clod Out, Boneless	9-18	22-32	18-25	32-39	25-32	39-49	32-42	49-63
311A	Square Cut Chuck, 5 Ribs, Clod Out, Boneless	10-19	24-34	19-26	34-42	26-33	42-52	33-44	52-66
311B	Square Cut Chuck, 4 Ribs, Clod Out, Boneless & Tied	9-18	23-32	18-25	32-39	25-32	39-49	32-42	49-63

—Continued

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE—Continued

Item No.	Product	Range A		Range B		Range C		Range D	
		Veal	Calf	Veal	Calf	Veal	Calf	Veal	Calf
		<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
311C	Square Cut Chuck, 5 Ribs, Clod Out, Boneless & Tied	10-19	24-34	19-26	34-42	26-33	42-52	33-44	52-66
312	Foreshank	1-2	2-3	2-3	3-4	3-4	4-5	4-5	5-7
313	Breast	3-6	7-9	6-8	9-12	8-10	12-15	10-12	15-19
330	Hindsaddle, 2 Ribs	30-50	63-88	50-70	88-112	70-88	112-138	88-114	138-175
330A	Hindsaddle, 1 Rib	29-49	61-86	49-69	86-110	69-86	110-135	86-112	135-172
331	Loin, 2 Ribs (Double)	6-10	13-18	10-14	18-21	14-18	21-28	18-23	28-42
331A	Loin, 1 Rib (Double)	5-9	11-16	9-13	16-19	13-17	19-25	17-22	25-39
332	Loin, 2 Ribs, Trimmed (Double)	5-8	11-15	8-11	15-19	11-14	19-22	14-17	22-28
332A	Loin, 1 Rib, Trimmed (Double)	4-7	9-12	7-10	12-16	10-13	16-19	13-16	19-25
333	Full Loin, Trimmed	6-9	11-15	9-12	15-19	12-15	19-24	15-18	24-29
334	Legs (Double)	24-40	50-70	40-56	70-90	56-70	90-110	70-90	110-140
335	Leg, Oven-Prepared, Boneless	9-15	18-26	15-21	26-33	21-26	33-40	26-33	40-51
336	Leg, Shank Off, Oven-Prepared, Boneless	7-11	13-19	11-15	19-24	15-19	24-29	19-23	29-33
337	Hindshank	1-2	2-3	2-3	3-4	3-4	4-5	4-5	5-7
339	Leg, Short Cut	9-16	20-28	16-23	28-36	23-38	36-44	38-47	44-52
340	Back, 9 Ribs	11-19	22-30	19-26	30-42	26-31	42-51	31-40	51-65
340A	Back, 8 Ribs	9-17	20-28	17-24	28-40	24-29	40-49	29-38	49-63
341	Back, 9 Ribs, Trimmed	9-15	18-25	15-20	25-33	20-25	33-40	25-32	40-51
341A	Back, 8 Ribs, Trimmed	7-13	16-23	13-18	23-31	18-23	31-38	23-30	38-49
342	Hindsaddle, 9 Ribs, Long Cut	35-58	73-102	58-81	102-131	81-100	131-160	100-130	160-204
342A	Hindsaddle, 8 Ribs, Long Cut	33-56	71-100	56-79	100-129	79-98	129-158	98-128	158-198
343	Hindsaddle, 9 Ribs, Long Cut, Trimmed	33-55	69-96	55-77	96-124	77-96	124-151	96-123	151-192
343A	Hindsaddle, 8 Ribs, Long Cut, Trimmed	31-53	67-94	53-75	94-122	75-94	122-149	94-121	149-188

NOTE: When single hotel racks, square cut chucks, loins, legs, etc., are specified, their respective weight shall be one-half of that prescribed for double cuts in the table.

NOTE: The weight ranges of cuts as shown in the above table do not necessarily reflect any relation to the carcass weight ranges. Studies have shown that all carcasses within a given weight range will not produce cuts that are uniform in weight. Therefore, in ordering cuts, purchasing officials should specify the weight range(s) desired without regard to the carcass weight shown in the various ranges.

INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	3 ozs.	4 ozs.	5 ozs.	6 ozs.	8 ozs.	10 ozs.
1300	Cubed Steaks	X	X	X	X	X	
1301	Cubed Steaks, Special	X	X	X	X	X	
1306	Rib Chops	X	X	X	X	X	X
1309	Shoulder Chops	X	X	X	X	X	X
1332	Loin Chops	X	X	X	X	X	X
1336	Cutlets	X	X	X	X		
1395	Veal for Stewing ¹	Amount as Specified					
1396	Ground Veal ¹	Amount as Specified					
1396A	Ground Veal Patties ¹	Amount as Specified					

NOTE: Because it is impractical to list all portion weights that purchasers may desire, those identified by the letter "X" are suggested only. Other portion weights may be specified if desired.

¹May also be prepared from calf in which case the name—calf—shall apply.

DETAILED REQUIREMENTS

Item No. 300 - Carcass—A veal or calf carcass is the unsplit carcass with not more than 2 tail vertebrae. Bloody tissue and frayed ends at the neck shall be removed. The diaphragm and hanging tender may be removed.

Item No. 303 - Side—A side consists of one-half of the carcass produced by cutting lengthwise centrally through the backbone. Bloody tissue and frayed ends at the neck shall be removed. The diaphragm and hanging tender may be removed.

Item No. 303A - Side, 2 Rib Hindquarter—This item is prepared from Item No. 303. The side shall be divided into a forequarter and hindquarter by cutting between the 11th and 12th ribs, the 12th and 13th ribs remaining with the hindquarter. Bloody tissue and frayed ends at the neck shall be removed. The diaphragm and hanging tender may be removed.

Item No. 303B - Side, 1 Rib Hindquarter—This item is the same as Item No. 303A except that the cut dividing the side into a forequarter and hindquarter shall be made between the 12th and 13th ribs, the 13th rib remaining with the hindquarter.

Item No. 303C - Side, Boneless—The boneless side is prepared from Item No. 303. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, kidney knob, mammary tissue, the prescapular, popliteal, and prefemoral lymph glands and the knee cap, and surrounding heavy connective tissue shall be removed. The thick tendinous ends of shanks shall be removed by cutting back until a cross-sectional cut shows at least 75 percent lean. The tenderloin may be withheld. The visual fat content of the boneless meat shall not exceed 10 percent.

Item No. 304 - Foresaddle, 11 Ribs—The foresaddle is the anterior portion of the carcass after severance from the hindsaddle by cutting between the 11th and 12th ribs, the 12th and 13th ribs remaining with the hindsaddle. Bloody tissue and frayed ends at the neck shall be removed. The diaphragm may be removed.

Item No. 304A - Foresaddle, 12 Ribs—This item is the same as Item No. 304 except that the cut severing it from the hindsaddle shall be made between the 12th and 13th ribs, the 13th rib remaining with the hindsaddle. The diaphragm may be removed.

Item No. 305 - Bracelet, 7 Ribs—The bracelet is prepared from Item No. 304 and consists of the hotel rack and plates intact. The chucks shall be separated from the bracelet by a reasonably straight cut across the foresaddle between the 4th and 5th ribs.

Item No. 305A - Bracelet, 7 Ribs—This item is prepared from Item No. 304A and consists of the hotel rack and plates intact. The chucks shall be separated from the bracelet by a reasonably straight cut across the foresaddle between the 5th and 6th ribs.

Item No. 306 - Hotel Rack, 7 Ribs—The hotel rack is prepared from Item No. 305. The plate portions shall be separated from the rack by a straight cut across the ribs which is not more than 4 inches from the outer tip of the ribeye muscle.

Item No. 306A - Hotel Rack, 7 Ribs—This item is prepared from No. 305A as described in Item No. 306.

Item No. 308 - Chucks, 4 Ribs—The four-rib chucks are that portion of the foresaddle remaining after removal of the Bracelet - Item No. 305.

Item No. 308A - Chucks, 5 Ribs—The five-rib chucks are that portion of the foresaddle remaining after removal of the Bracelet - Item No. 305A.

Item No. 309 - Square Cut Chucks, 4 Ribs—The square cut chucks are prepared from Item No. 308. The foreshanks and briskets are removed by a straight cut perpendicular to the outer skin surface which passes through the cartilaginous juncture of the first rib and the sternum continuing in a straight line to the 4th rib perpendicular to the cut removing the bracelet.

Item No. 309A - Square Cut Chucks, 5 Ribs—The square cut chucks are prepared from Item No. 308A. The foreshanks and briskets are removed by a straight cut perpendicular to the outer skin surface which passes through the cartilaginous juncture of the first rib and the sternum continuing in a straight line to the 5th rib perpendicular to the cut removing the bracelet.

Item No. 309B - Square Cut Chuck, 4 Ribs, Boneless—The boneless square cut chuck is prepared from one-half of Item No. 309. The shoulder clod shall be removed (with or without the "Scotch tender" attached) without undue scoring. The remaining meat of the chuck must be left intact. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, and the prescapular lymph gland and surrounding fat in excess of 1/2 inch in thickness shall be removed.

Item No. 309C - Square Cut Chuck, 5 Ribs, Boneless—This item is prepared from Item No. 309A as described in Item No. 309B.

Item No. 309D - Square Cut Chuck, Neck Off, 4 Ribs, Boneless and Tied—This item is the same as Item No. 309B except that the neck shall be removed by a straight cut reasonably perpendicular to the neck vertebrae along a line where the neck joins the shoulder. It shall be rolled with the eye muscle lengthwise of the roll and be tied girthwise and lengthwise. When smaller roasts are specified, the meat shall be cut at a right angle to its length.

Item No. 309E - Square Cut Chuck, Neck Off, 5 Ribs, Boneless and Tied—This item is prepared from Item No. 309C as described in Item No. 309D.

Item No. 310 - Shoulder Clod—The shoulder clod includes the large outside muscle system which lies posterior to the elbow joint and ventral to the medial ridge of the bladebone and the "Scotch Tender" muscle which lies dorsal to the medial ridge. The thick end of the clod includes all muscles overlying the first natural seam and the thinner end includes all the muscles lying above the rear portion of the bladebone. The clod shall be removed without undue scoring and without cutting through the flesh at the ridge of the bladebone. The heavy tendons at the elbow end of the clod shall be trimmed even with the lean.

Item No. 310A - Shoulder Clod, Special—The shoulder clod, special is the same as Item No. 310 except that the "Scotch Tender" muscle shall not be included.

Item No. 310B - Shoulder Clod Roast—The shoulder clod roast is the same as Item No. 310A except that the ventral edge shall be trimmed approximately parallel to the edge lying adjacent to the medial ridge of the bladebone. All sides shall be trimmed so that the clod is not less than one-half inch thick at any point. If specified, clods shall be split lengthwise, the ends reversed, and the boned surfaces placed together and tied girthwise. Also, if specified, larger roasts may be produced by reversing the ends of two clods, placing the boned surfaces together, and tying girthwise.

Item No. 311 - Square Cut Chuck, 4 Ribs, Clod Out, Boneless—This item is the same as Item No. 309B except that the shoulder clod (with or without the "Scotch tender" attached) shall be excluded.

Item No. 311A - Square Cut Chuck, 5 Ribs, Clod Out, Boneless—This item is the same as Item No. 309C except that the shoulder clod (with or without the "Scotch tender" attached) shall be excluded.

Item No. 311B - Square Cut Chuck, 4 Ribs, Clod Out, Boneless and Tied—This item is made from Item No. 311. It shall be rolled with the eye muscle lengthwise of the roll and tied girthwise and lengthwise.

Item No. 311C - Square Cut Chuck, 5 Ribs, Clod Out, Boneless and Tied—This item is made from Item No. 311A. It shall be rolled with the eye muscle lengthwise of the roll and tied girthwise and lengthwise.

Item No. 312 - Foreshank—The foreshank is the foreleg portion remaining intact with the brisket after removal from the chuck in making the Square Cut Chuck - Item No. 309. The foreshank shall be separated from the brisket by a cut following the natural seam, except that part of the web muscle may remain on the shank.

Item No. 313 - Breast—The breast is the brisket and plate remaining intact after removal from the forequarter of the Foreshank - Item No. 312, Square Cut Chuck - Items Nos. 309 or 309A, and the Hotel Rack - Item Nos. 306 or 306A.

Item No. 330 - Hindsaddle, 2 Ribs—The two-rib hindsaddle is the posterior portion of the carcass remaining after the removal of the Foresaddle, 11 Ribs - Item No. 304. The hanging tender may be removed.

Item No. 330A - Hindsaddle, 1 Rib—The one-rib hindsaddle is the posterior portion of the carcass after removal of the Foresaddle, 12 Ribs - Item No. 304A. The hanging tender may be removed.

Item No. 331 - Loin, 2 Ribs—The loin is the anterior portion of Item No. 330, after removal of the legs. The legs shall be removed by a straight cut perpendicular to the outer skin surface and perpendicular to the backbone through a point immediately anterior to the hipbone cartilage.

Item No. 331A - Loin, 1 Rib—This item is prepared from Item No. 330A as described in Item No. 331.

Item No. 332 - Loin, 2 Ribs, Trimmed—The trimmed loin is prepared from Item No. 331. The flank portions shall be removed by a straight cut which is not more than 4 inches from the outer tip of the loin eye muscle. The kidney knobs shall be removed and the lumbar fat shall be trimmed so that it does not exceed 1/2 inch in thickness at the leg end. The fat must then be tapered down to the lean surface at a point not beyond 3/4 of the length of the loin.

Item No. 332A - Loin, 1 Rib, Trimmed—This item is prepared from Item No. 331A as described in Item No. 332.

Item No. 333 - Full Loin, Trimmed—The trimmed full loin is prepared from one-half the Hindsaddle - Item No. 330A - after sawing and cutting lengthwise centrally through the spine and is obtained as follows: The untrimmed full loin and flank is removed from the

hindquarter by cutting in a straight line perpendicular to the contour of the outer skin surface. The cut is made on a straight line which starts at a point on the backbone which is the juncture of the last (5th) sacral vertebra and the first tail (candal) vertebra, passes through a second point which is immediately anterior to the protuberance of the femur bone and exposes the ball of the femur bone and then continues in the same straight line beyond the second point to complete the cut. The kidney knob and the fat lying closely around the kidney must be removed by a cut starting at the end of the kidney and slanting directly to the rear edge of the 13th rib, thus leaving the 13th rib practically free of lumbar fat. The hanging tender must be entirely removed. The flank must be removed by a cut starting at a point on the leg end of the full loin which leaves not more than one-half inch of fat and flank muscle on the ventral edge of the loin end (sirloin) and continuing in a straight line to a point on the 13th rib which is not more than four inches from the outer tip of the loin eye muscle. The fat must be trimmed from the internal section of the loin with the full loin lying unsupported with the outer skin surface down on a flat surface. The fat which extends above a flat plane parallel to the flat surface of the cutting bench and which is level with the protruding edge of the chine bone must be removed. Another cut must be made to remove all fat above a plane using the following two lines as guides for each edge of the plane: An imaginary line 1 inch above the protruding edge of the chine bone to a line on the inside of the loin 2 inches from the flank edge. The fat remaining in the sacral region shall not exceed 3/4 inch in depth.

Item No. 334 - Legs—The legs are that portion of the hindsaddle remaining after the removal of the Loin - Item No. 331 or 331A.

Item No. 335 - Leg, Oven Prepared, Boneless—This item is prepared from one-half of Item No. 334. The flank, practically all cod or udder fat, and surface fat in excess of 1/2 inch in thickness shall be removed. All bones, cartilage, gambrel cord, and the heavy connective tissue surrounding the kneecap shall be removed. The round bone shall be removed after making a cut along the natural seam between the inside and the knuckle. The boneless leg shall be tied girthwise and lengthwise.

Item No. 336 - Leg, Shank Off, Oven-Prepared, Boneless—This item is the same as Item No. 335 except that the shank meat shall be removed along the natural seam between the shank meat and the heel.

Item No. 337 - Hindshank—This item is prepared from one-half of Item No. 334. The shank bone and shank meat shall be removed by a cut along the natural seam between the shank meat and the heel and which passes through the stifle joint thus removing the hindshank intact. All hock bones and the gambrel cord shall be removed.

Item No. 339 - Leg, Short-Cut—The short-cut leg is that portion of the hindquarter remaining after the removal of the Full Loin, Trimmed - Item No. 333. Not more than two tail vertebrae may remain on the short-cut leg.

Item No. 340 - Back, 9 Ribs—This item is that portion of the carcass remaining after the removal of the Chucks, 4 Ribs - Item No. 308 - and the Legs - Item No. 334.

Item No. 340A - Back, 8 Ribs—This item is that portion of the carcass remaining after the removal of the Chucks, 5 Ribs - Item No. 308A - and the Legs - Item No. 334.

Item No. 341 - Back, 9 Ribs, Trimmed—This item is prepared from Item No. 340. The plates and flanks are removed by a straight cut which is not more than 4 inches from the outer tip of

the eye muscle. The kidney knobs shall be removed and the lumbar fat shall be trimmed so that it does not exceed 1/2 inch in thickness at the leg end. The lumbar fat shall be tapered down to the lean surface at a point not beyond 3/4 of the length of the loin.

Item No. 341A - Back, 8 Ribs, Trimmed—This item is prepared from Item No. 340A as described in Item No. 341.

Item No. 342 - Hindsaddle, 9 Ribs, Long-Cut—This item is that portion of the carcass remaining after removal of the Chucks, 4 Ribs - Item No. 308.

Item No. 342A - Hindsaddle, 8 Ribs, Long-Cut—This item is that portion of the carcass remaining after removal of the Chucks, 5 Ribs - Item No. 308A.

Item No. 343 - Hindsaddle, 9 Ribs, Long-Cut, Trimmed—This item is the Legs - Item No. 334 - and the Back, 9 Ribs, Trimmed - Item No. 341 - portions of the carcass intact.

Item No. 343A - Hindsaddle, 8 Ribs, Long-Cut, Trimmed—This item is the Legs - Item No. 334 - and the Backs, 8 Ribs, Trimmed - Item No. 341A - portions of the carcass intact.

DETAILED REQUIREMENTS FOR PORTION-CUT PRODUCTS

Item No. 1300 - Cubed Steaks—Cubed steaks may be produced from any boneless meat from the veal or calf carcass which is reasonably free of membranous tissue, cartilage, tendons, and ligaments. The meat shall be made into cubed steaks through use of machines designed for this purpose. Knitting of two or more pieces and folding of the meat when cubing is permissible. Cubed steaks shall be practically square, oval, or round and shall be reasonably uniform in shape. After cubing, surface fat on the edge of the cubed steaks shall not exceed 1/4 inch in width at any point when measured from the edge of the lean. Surface and seam fat shall cover not more than 15 percent of the total area on either side of the steak. The cubed steaks shall not break when suspended from any point 1/2 inch from the outer edge of the steak.

Item No. 1301 - Cubed Steaks, Special—Special cubed steaks shall meet all the requirements for Item No. 1300. In addition, special cubed steaks shall be produced only from muscles contained in the square cut chuck, hotel rack, trimmed loin, or leg. Knitting of two or more pieces of meat or folding of the meat is not acceptable.

Item No. 1306 - Rib Chops—Rib chops shall be prepared from a single Hotel Rack - Item No. 306 - or Item No. 306A. The breast portion on individual chops shall be removed at a point which is not more than 3 inches from the outer tips of the ribeye muscle. The protruding edge of the chine bone shall be removed by sawing at an approximate 45 degree angle to the split thoracic vertebrae beginning at the dorsal edge of the spinal cord groove. Chops cut from the bladebone section shall have the bladebone and related cartilage and the muscles and fat overlying the level of the bladebone and cartilage removed.

Item No. 1309 - Shoulder Chops—Shoulder chops shall be prepared from both the arm and bladebone sections of the single Square Cut Chuck - Item No. 309 or Item No. 309A. Arm-bone shoulder chops shall be cut first and must be cut reasonably parallel to the normal line of separation of the shank from the shoulder up to the knuckle. Arm-bone chops shall have the rib bones and intercostal meat removed. In addition, the underlying fat in excess of 1/4 inch

also shall be removed. Blade chops shall be cut approximately parallel to the rib bones up to the knuckle.

Item No. 1332 - Loin Chops—Loin chops shall be prepared from a single Loin, Trimmed - Item No. 332 or Item No. 332A. The flank edge on individual chops shall be removed at a point which is not more than 3 inches from the outer tip of the loin eye muscle. Loin chops shall contain no portion of the hipbone or related cartilage.

Item No. 1336 - Cutlets—Cutlets shall be prepared from the Leg, Shank-Off, Oven-Prepared, Boneless - Item No. 336. The heel (gastrocnemius muscle) shall be removed. Major muscles of the leg shall be separated by cutting through the natural seams. All fat and membranous tissue shall be removed from the muscle surfaces. The muscles may be cut at any angle (across the grain) and also may be split lengthwise to obtain the size cutlets specified. If specified, each cutlet shall be cubed twice through a machine designed for this purpose and shall be of the same approximate shape. Knitting of two or more pieces or folding of the meat is not acceptable.

Item No. 1395 - Veal for Stewing—This item may be prepared from any combination of carcasses or cuts which will produce veal for stewing complying with the end product requirements. Meat with dark discoloration and all bones, cartilage, exposed large blood vessels, heavy connective tissue, backstrap, and the prescapular, prefemoral, and popliteal lymph glands shall be removed. Prior to dicing, the boneless meat shall be trimmed in such a manner that surface and seam fat shall not exceed 1/4 inch in thickness at any point. In addition, the visual fat content of the boneless meat, shall not exceed 20 percent. After being prepared as described above, the boneless meat shall be either hand diced or processed through a dicing machine (grinding not permitted). No less than 75 percent, by weight, of the resulting pieces shall be of a size which is the equivalent of not less than a 1/2 inch cube or not more than a 1-1/4 inch cube and no individual surface on these pieces shall exceed 2-1/2 inches in length. (When specified, this item may be prepared from calf, in which cases the name shall be changed to Calf for Stewing.)

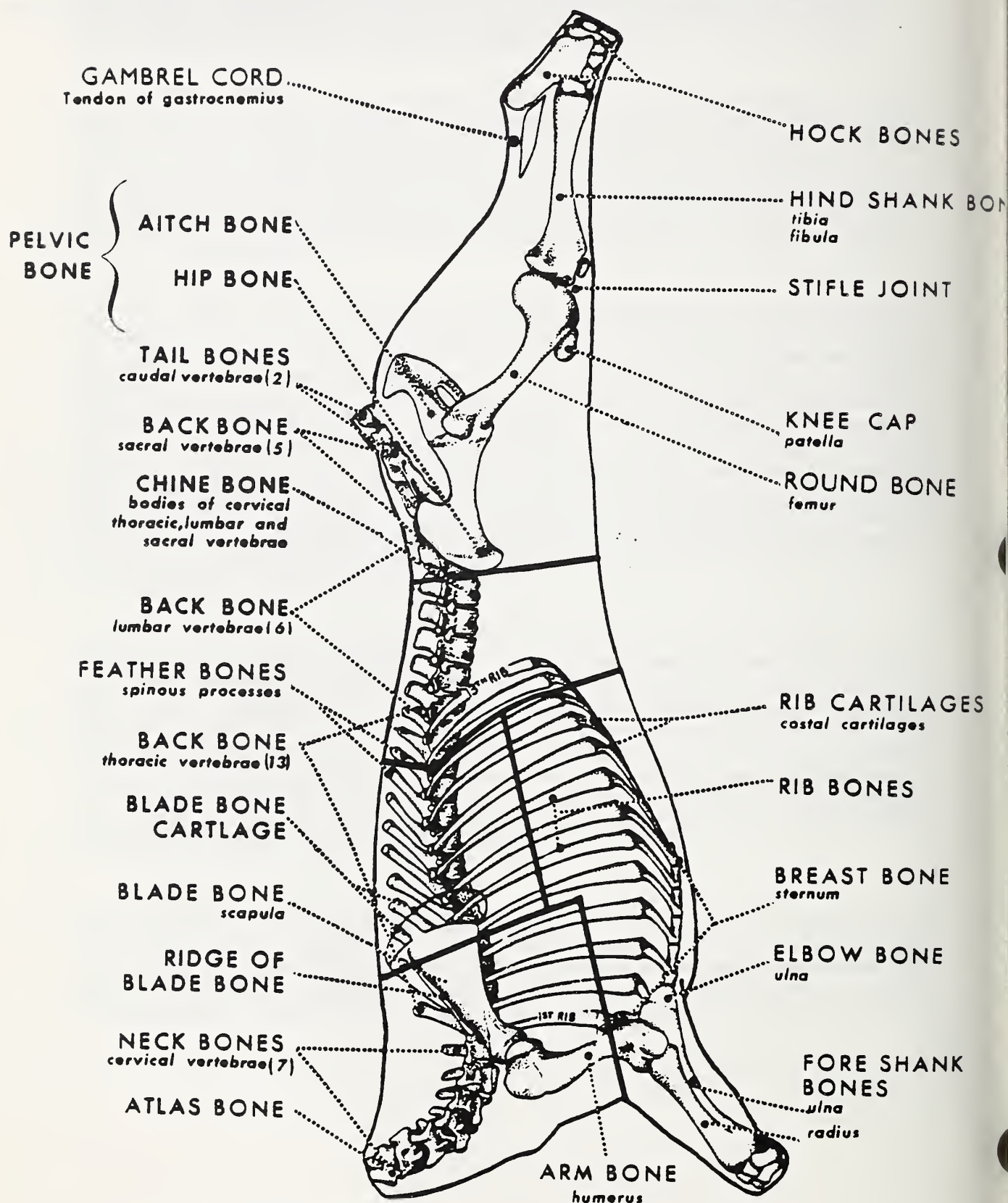
Item No. 1396 - Ground Veal—Ground veal may be prepared from any combination of carcasses or cuts which will produce ground veal complying with the end product requirements. Meat with dark discoloration, all bones, cartilage, backstrap, exposed large blood vessels, heavy connective tissue, and the prescapular, prefemoral, and popliteal lymph glands shall be removed. The visual fat content of the boneless meat, determined prior to grinding, shall not exceed 20 percent. After being prepared as described above, the boneless meat shall be ground at least once through a plate having holes no larger than 3/4 inch in diameter (or it may be otherwise reduced in size provided the texture and appearance of the product after final grinding is typical of ground veal prepared by grinding only.) Final grinding shall be through a plate having holes 1/8 inch in diameter.

The meat shall be thoroughly blended prior to each reduction in size. The ground veal shall not be mixed after the final grinding. The boneless meat shall not exceed 50°F. during grinding and packaging. The ground veal shall be packaged in the amount specified by the purchaser and packed immediately upon completion of grinding. (When specified, this item may be prepared from calf, in which case the name shall be changed to Ground Calf.)

Item No. 1396A - Ground Veal Patties—This item shall be prepared from Item No. 1396. The ground veal shall be mechanically formed into round patties of the size specified. They shall be arranged in stacks with each patty separated from adjacent patties by two sheets of waxed patty paper, except that, when patties are individually quick frozen, the patty paper may be excluded. When producing patties to be delivered frozen, frozen boneless meat, previously accepted in the fresh state, may be used. (When specified, this item may be prepared from calf, in which case the name shall be changed to Ground Calf Patties.)

VEAL SKELETAL CHART

Location, Structure and Names of Bones



Courtesy of National Livestock and Meat Board

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS
FOR FRESH PORK
APPROVED BY USDA

These specifications contain descriptions of various pork products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs, these specifications must be used with "Institutional Meat Purchase Specifications General Requirements," which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef; Fresh Lamb and Mutton; Fresh Veal and Calf; Cured, Cured and Smoked, and Fully-Cooked Pork Products; Cured, Dried and Smoked Beef Products; Edible By-Products; and Sausage Products. Copies of specifications for these products may be purchased from the Superintendent of Documents.

UNITED STATES DEPARTMENT OF AGRICULTURE

**Agricultural Marketing Service
Livestock Division
Washington, D.C.**

EFFECTIVE JANUARY 1975

ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER

GRADE

Carcasses—

U. S. No. 1	U. S. No. 3	U. S. Utility
U. S. No. 2	U. S. No. 4	

Wholesale and Fabricated Cut Selection: See Description of Selection section

Selection No. 1

Selection No. 2

(Not applicable to spareribs, tenderloins, hocks, feet, trimmings, ground items, and neckbones.)

WEIGHT RANGE OR SIZE

Carcasses and Cuts: See weight range table.

Ground Pork Patties: Either the individual patty weight or the number of patties per pound may be specified.

Ground Pork Patty Weight Tolerances

For patties with a specified weight of 3 ounces or less, a tolerance of ± 2 patties from the projected number in a 10-pound unit will be permitted. For patties with a specified weight of more than 3 ounces a tolerance of ± 1 patty from the projected number in a 10-pound unit will be permitted. (When patties are specified by a number per pound, this shall be converted to patty weight to determine tolerances, i.e., 6 to the pound = 2.67 ozs.) For example:

Specified Size		Number Per 10-Pound Unit	Tolerance (over and under)
Weight	No. Per Pound		
1.6 oz.	10	100	2
2.0 oz.	8	80	2
3.2 oz.	5	50	1
4.0 oz.	4	40	1

Example: When 2 ounce patties are specified, 10-pound units, having 78-82 patties are acceptable.

Portion Cut Items: *Either* the portion weight or thickness desired—*not both*—must be specified. If weight is to be specified, see the weight range table. If thickness is to be specified, the actual thickness desired must be indicated. (Not applicable to cubed filets.) Also, in order to control uniformity of portion sizes, the weight range of the IMPS cut from which the portions are to be produced may be specified. In this case, the fat thickness of the IMPS cut should be approximately the same as the fat thickness specified for the portion cut.

Portion Cut Weight Tolerances:

If portion weight is specified, the following tolerances will be permitted:

Weight Specified	Tolerances (over and under)
Less than 6 ozs.	1/4 oz.
6 ozs. or more	1/2 oz.

Example: When 4 ounce chops are specified, individual chops weighing 3-3/4 to 4-1/4 ounces are acceptable.

Portion Cut Thickness Tolerances:

If thickness is specified, the following tolerances will be permitted:

Thickness Specified	Tolerances (over and under)
1 inch or less	3/16 inch
More than 1 inch	1/4 inch

Example: When 1-1/4 inch chops are specified, individual chops measuring 1 to 1-1/2 inches are acceptable.

STATE OF REFRIGERATION

- A - Chilled
- B - Frozen

DESCRIPTION OF SELECTION

Selection No. 1—Hams, shoulders, shoulder picnics, loins, and Boston butts of Selection No. 1 are meaty, based on a composite evaluation of thickness of muscling and quantity of intermuscular and external fat. Although various combinations of thickness of muscling and quantities of intermuscular and external fat will meet the minimum requirements for meatiness, cuts usually are at least moderately thick and plump throughout, have at least moderately thick muscling, and not more than a small amount of inter-muscular fat nor more than a small amount of external fat on the unskinned portions of skinned hams and shoulders. The bones must not be ossified to a degree that cartilage is not in evidence in the pelvic, spinal, and scapular sections of the pork cuts. The split chine bone, spinous processes, and cross-cut sections of bones must be porous and not appreciably brittle or flinty. The color of the bones must be in the range from red to deep pink. The exterior surfaces of the rib bones must show at least some redness. The lean must be at least slightly firm; possess a bright, reasonably uniform color (slightly two-toned is permissible), ranging from light pink to light red; and have a fine, smooth texture. In addition, hams must have at least traces of marbling and shoulders, shoulder picnics, loins, and Boston butts must have at least a slight amount of marbling. (See NOTE at end of section.)

Selection No. 1 bellies must indicate at least a slightly high ratio of lean to fat and have a uniform distribution of fat and lean layers. They may vary in thickness from slightly thick

to moderately thick and must be moderately uniform in thickness, moderately long in relation to width, and may show a slight amount of marbling.

The exterior fat on the fresh pork cuts must be at least slightly firm, white, and reasonably uniform in distribution. The skin must be thin, smooth, and pliable. The pork cuts must be free from bruises, dislocated or enlarged joints or other malformation, or odor foreign to fresh pork. They must be practically free from scores, miscut, abrasions, hook marks, blemishes, hair roots, or other defects.

Selection No. 2—Hams, shoulders, shoulder picnics, loins, and Boston butts of Selection No. 2 have a moderate degree of meatiness, based on a composite evaluation of thickness of muscling and quantity of intermuscular and external fat. Although various combinations of thickness of muscling and quantities of intermuscular and external fat will meet the minimum requirements for meatiness, cuts usually are at least slightly thick and plump throughout with slightly thick muscling and a slightly high to high amount of intermuscular fat with a slightly high to high amount of external fat on the unskinned portions of skinned hams and shoulders. The bones must not be ossified to a degree that cartilage is not in evidence in the pelvic, spinal, and scapular sections of the pork cuts. The split chine bone, spinous processes, and cross-cut sections of bones must be porous and not appreciably brittle or flinty. The color of the bones must be in the range from red to deep pink. The exterior surfaces of the rib bones must show at least some redness. The lean meat must be at least slightly firm, possess a bright, reasonably uniform color (slightly two-toned is permissible), ranging from light pink to light red; and have a fine, smooth texture. In addition, hams must have at least traces of marbling and shoulders, shoulder picnics, loins, and Boston butts must have at least a slight amount of marbling. (See NOTE at end of section.)

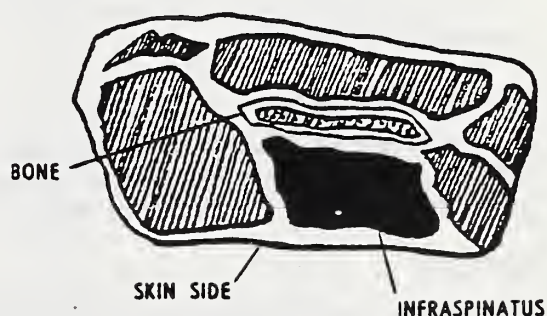
Selection No. 2 bellies must indicate a slightly low to moderately low ratio of lean to fat, except that bellies with a higher ratio of lean to fat but which are not eligible for Selection No. 1 because of thickness, uniformity, or length-width proportions may be included provided they meet those requirements for Selection No. 2. They usually are moderately thick or thick and usually have moderately thick fat deposits between the layers of lean. They may be uneven in thickness, may be slightly short in relation to width, and may have a slight amount of marbling.

The exterior fat on the fresh pork cuts must be at least slightly firm, white, and fairly uniform in distribution. The skin must be thin, smooth, and pliable. The pork cuts must be free from bruises, dislocated or enlarged joints or other malformation, or odor foreign to fresh pork. However, pork cuts with slight scores, abrasions, hook marks, or other cuts which do not interfere with the making of satisfactory slices, will be acceptable. Pork cuts showing only a slight amount of hair roots, or which are only slightly miscut or misshapen may be included.

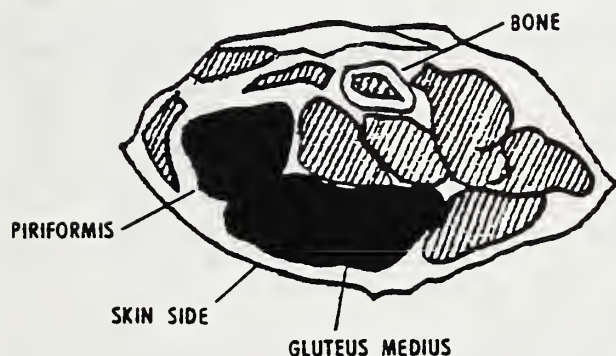
NOTE: Quality characteristics of the lean (marbling, color, texture, and firmness) will be determined by examining the muscles in the cuts listed below:

<u>Cuts</u>	<u>Muscles Examined</u>
Hams. . . . .	.Piriformis and gluteus medius
Loin	
Shoulder . . . . .	.Longissimus dorsi and spinalis
Boston Butt	
Shoulder Picnic . . . . .	.Infraspinatus

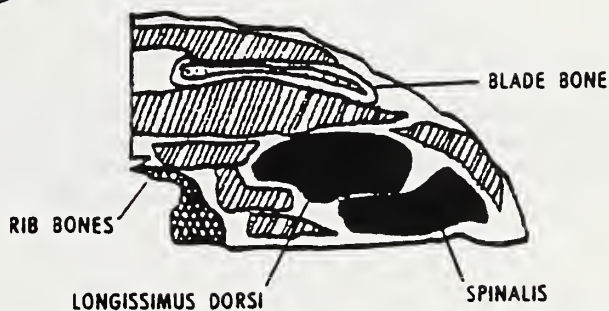
SHOULDER PICNIC



HAM



LOIN



Diagrams of the shoulder and Boston Butt are not shown. The cut surface of these cuts showing the longissimus dorsi and spinalis muscles are the same as shown for the loin.

TYING

When tying is required, roasts must be made firm and compact and held intact by individual loops of strong twine uniformly spaced at approximate 2-inch intervals girthwise. In addition, some roasts may require tying lengthwise. In lieu of string tying, it is permissible to enclose roasts in a stretchable netting or by any other equivalent method. Purchasers may specify that roasts be tied when this requirement is not specified in the detailed roast item specification.

MATERIAL

Items with coarse-textured dark meat or other characteristics indicating that they were produced from aged sows, stags, or boars are not acceptable. Cuts which have been excessively trimmed in order to meet specified weights or which do not meet the specification requirements for any reason are not acceptable. Except as otherwise provided herein, the meat shall show no evidence of freezing or defrosting. Also, the product shall show no evidence of mishandling and shall be in excellent condition to the time of delivery.

Portion cut items to be delivered frozen may be produced from frozen cuts which have been previously accepted in the fresh-chilled state provided such cuts are in excellent condition and in their original shape. Products thus produced shall be packaged, packed, and promptly returned to the freezer.

CUTTING CHOPS

Unless otherwise specified in the individual item specification, chops and steaks shall be cut in full slices in a straight line reasonably perpendicular to the outer surface and at an approximate right angle to the length of the cut from which they are produced.

BONING

Boning shall be accomplished with sufficient care to allow each cut to retain its identity and to avoid objectionable scores in the meat.

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Range A	Range B	Range C
		Pounds	Pounds	Pounds
400	Carcass	120-150	150-180	180-210
401	Ham, Regular	10-14	14-17	17-20
401A	Ham, Regular, Short Shank	10-14	14-17	17-20
402	Ham, Skinned	10-14	14-17	17-20
402A	Ham, Skinned, Short Shank	10-14	14-17	17-20
402B	Ham, Boned and Tied	6-8	8-10	10-12
403	Shoulder	8-12	12-16	16-20
404	Shoulder, Skinned	8-12	12-16	16-20
405	Shoulder Picnic	4-6	6-8	8-12
406	Boston Butt	4-8	8-12	
406A	Boston Butt, Boned and Tied	4-6	6-8	
407	Shoulder Butt, Boneless	1-1/2-3	3-5	
408	Belly	10-12	12-14	14-16
409	Belly, Skinless	10-12	12-14	14-16
410	Loin	10-14	14-17	17-20
411	Loin, Bladeless	10-14	14-17	17-20
412	Loin, Center Cut	4-6	6-8	8-10
413	Loin, Boneless	6-8	8-10	10-12
413A	Loin, Boned and Tied	6-8	8-10	10-12
414	Canadian Back	3-4	4-5	5-6
415	Tenderloin	1/4-1/2	1/2-3/4	3/4-1
416	Spareribs	1-1/2-3	3-5	5-up
416A	Spareribs, Breast Off	1-2-1/2	2-1/2-4	4-up
417	Shoulder Hock	1/2-1	1-1/2	1-1/2-2-1/2
418	Trimnings (90% Lean)	Amount as specified		
419	Trimnings (80% Lean)	Amount as specified		
420	Front Feet	3/4-1-1/2		
421	Neck Bones	3/4-1	1-2	
422	Back Ribs	Under 1-1/2	1-1/2-3	3-up
423	Country Style Ribs	1-2	2-3	3-up

NOTE: The weight ranges of cuts as shown in the above table do not necessarily reflect any relation to the carcass weight ranges. Also cuts derived from another cut do not necessarily reflect any relation to the basic cut. Therefore, in ordering cuts, purchasing officials should specify the weight range(s) desired without regard to the carcass or basic cut weight shown in the various ranges.

INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Portion Size				
		3 ozs.	4 ozs.	5 ozs.	6 ozs.	8 ozs.
1400	Filets	X	X	X	X	X
1406	Boston Butt Steaks, Bone-In		X	X	X	X
1407	Shoulder Butt Steaks, Bnls.	X	X	X	X	X
1410	Chops, Regular	X	X	X	X	
1410A	Chops, with Pocket			X	X	X
1410B	Rib Chops, with Pocket			X	X	X
1411	Chops, Bladeless	X	X	X	X	X
1412	Chops, Center Cut	X	X	X	X	X
1412A	Chops, Center Cut, Special	X	X	X	X	X
1412B	Chops, Center Cut, Boneless	X	X	X	X	X
1413	Chops, Boneless	X	X	X	X	X
1495	Pork for Chop Suey	Amount as Specified				
1496	Ground Pork	Amount as Specified				
1496A	Ground Pork Patties	Size as specified				

NOTE: Because it is impractical to list all portion weights that purchasers may desire, the portion weights identified by the letter "X" are suggested only. Other portion weights may be ordered if desired.

DETAILED REQUIREMENTS

Item No. 400 - Carcass—The carcass shall be dressed "packer style" that is, without the head and with practically all internal fat removed. The major arteries of the ham essential for arterial pumping and curing shall be left intact. The diaphragm may be removed. The jowl shall remain intact with each carcass side, except for minor trimming and removal of bloody portions, lymph glands, etc. However, excessively trimmed or mutilated jowls not suitable for standard trimmed jowls or smoked jowl squares shall be removed by a reasonably straight cut, parallel to the body of the shoulder, behind the "ear dip," which shall remain on the jowl. Carcasses with "stuck" shoulders are not acceptable. Mutilated feet shall be removed at the hock or upper knee joint, as applicable. The carcasses shall be separated into reasonably uniform sides by cutting lengthwise centrally through the backbone and the sternum. Pork carcasses shall be maintained and delivered in the form of matched sides.

Item No. 401 - Ham, Regular—The ham is separated from the side by a straight cut approximately perpendicular to the outer skin surface and to a line parallel to the shank bones. This cut passes through a point which is not less than 1-1/2 inches and not more than 3 inches from the knob of the aitch bone. The foot shall be removed at or slightly above the hock joint. The tail bones and tail shall be removed. The fat on the face of the ham shall be removed without any appreciable scoring or damage to the muscular portion. Practically all pelvic fat shall be removed. The ham shall be suitably faced with a smooth, well-rounded skin collar extending not more than 2-1/2 inches inward from the center of the stifle joint and the lymph glands and fat in the flank area must be removed close to the muscles of the ham. The exterior fat thickness of the ham measured directly under the bone at the butt edge shall not exceed that indicated in the following schedule:

Weight Range of Ham	Maximum Fat Thickness	
	Selection No. 1	Selection No. 2
10-14 pounds	1-1/4 inches	1-3/4 inches
14-17 pounds	1-1/2 inches	2 inches
17-20 pounds	1-3/3 inches	2-1/4 inches

Item No. 401A - Ham, Regular, Short Shank—The short shank ham is the same as Item No. 401 except that approximately half or more of the shank (but not cut beyond the stifle joint) shall be removed by a straight cut made at an approximate right angle to the shank bones.

Item No. 402 - Ham, Skinned—The skinned ham is prepared from Item No. 401. The ham shall be partially skinned leaving a well-rounded skin collar not exceeding 20 percent of the distance from the stifle joint to the butt edge. The skin shall be removed so that the collar line is at a slant of at least 15 to 18 degrees toward the cushion side starting at the flank side leaving the skin collar approximately 1-1/2 inches longer on the flank edge. Fat remaining on the skinned surface shall not exceed 1/2 inch in depth measured at any point 1-1/2 inches or more from the edge of the skin collar except that at the tail end of the pelvic area the fat thickness shall not exceed 1 inch. The fat shall be neatly beveled to approximately meet the lean at the butt end.

Item No. 402A - Ham, Skinned, Short Shank—This item is the same as Item No. 402 except that approximately half or more of the shank (but not cut beyond the stifle joint) shall be removed by a straight cut made at an approximate right angle to the shank bones.

Item No. 402B - Ham, Boned and Tied—This item is prepared from Item Nos. 401A or 402A. All bones, cartilage, skin and surface fat in excess of 1/2 inch shall be removed. Fat on the butt end shall be beveled back at least 1 inch from the edge of the lean. Shank meat which is naturally attached may be included and shall be folded into the femur bone cavity as a plug. The ham shall be tied girthwise and lengthwise.

Item No. 403 - Shoulder—The shoulder is separated from the side by a straight cut, approximately perpendicular to the outer skin surface, beginning not more than 1 inch posterior to the elbow joint, but not exposing the elbow joint and continuing across the hog side. Not more than a slight enlargement of the medial ridge of the blade bone shall be evident. Meat with dark discoloration, the neckbones, ribs, breast bones, cartilage, intercostal meat, and breast flap shall be removed. The shoulder shall be suitably faced without appreciable scoring or undue removal of lean. The foot shall be removed at or slightly above the upper joint of the knee by a straight cut made at an approximate right angle to the shank bones. Unless otherwise specified, shoulders with shorter shanks (but not cut beyond the elbow joint) will be acceptable. The jowl shall be removed by a straight cut perpendicular to the outer skin surface and approximately parallel to the cut separating the shoulder from the side which leaves not more than 1 inch of the jowl on the shoulder. The fat and skin shall be beveled to approximately meet the lean at the butt end. The exterior fat thickness, measured perpendicular to the skin at the approximate center of the butt, shall not exceed that indicated in the following schedule:

Weight Range of Shoulder	Maximum Fat Thickness	
	Selection No. 1	Selection No. 2
8-12 pounds	1-1/4 inches	1-3/4 inches
12-16 pounds	1-3/4 inches	2-1/4 inches
16-20 pounds	2 inches	2-1/2 inches

Item No. 404 - Shoulder, Skinned—The skinned shoulder is prepared from Item No. 403. The shoulder shall be partially skinned leaving a well-rounded skin collar not exceeding 25 percent of the distance from the elbow joint to the butt edge. The skin shall be removed so that the collar line slants at least 15 degrees ventrally from the elbow side toward the jowl side. Fat remaining on the skinned surface shall not exceed 1/2 inch in depth measured at any point 1-1/2 inches or more from the edge of the skin collar and shall be beveled to approximately meet the lean at the butt end and on both sides. At least traces of false lean shall be evident on the skinned surface.

Item No. 405 - Shoulder Picnic—The shoulder picnic is prepared from Item No. 403. It is separated from the Boston butt by a reasonable straight cut perpendicular to the outer skin surface and approximately parallel to the breast side of the shoulder leaving not less than 1 nor more than 2 inches of the blade bone in the shoulder picnic. The skin and fat shall be beveled at least the equivalent of the thickness of the fat at the butt end. The exterior fat thickness measured at the skin edge of the bevel directly under the blade bone at the butt edge, shall not exceed the following schedule:

Weight Range of Picnic	Maximum Fat Thickness	
	Selection No. 1	Selection No. 2
4-6 pounds	3/4 inch	1-1/4 inches
6-8 pounds	7/8 inch	1-3/8 inches
8-12 pounds	1 inch	1-1/2 inches

Item No. 406 - Boston Butt—The Boston butt is separated from the shoulder as described in Item No. 405. The skin and underlying fat in excess of 1/4 inch thickness shall be removed. The false lean shall be exposed and the fat shall be beveled to approximately meet the lean on all sides.

Item No. 406A - Boston Butt, Boned and Tied—The boned and tied Boston butt is prepared from Item No. 406. The blade bone is removed without cutting through the flesh at the ridge of the blade bone so as to leave the blade meat firmly attached. The Boston butt shall be tied girthwise.

Item No. 407 - Shoulder Butt, Boneless—The boneless shoulder butt is prepared from Item No. 406. The blade bone and overlying flesh shall be removed.

Item No. 408 - Belly—The belly is prepared from that portion of the pork side middle remaining after removal of the loin, fat back, and the spareribs. The belly must be boneless and be practically free of cartilages. Any remaining cartilages must be approximately level with or slightly lower than the surface lean and the second longest diameter of any exposed cartilage must not exceed 3/8 inch. Practically all leaf fat and other abdominal surface fat must be removed. The belly must be separated from the fat back on a straight line not more than 1-1/2 inches beyond the outer-most curvature of the scribe line. The sides of the belly must be reasonably straight and parallel and approximately at right angles to the shoulder end. The ham end of the belly may be cut so that the flank side is approximately 1 inch longer than the fat back side. The belly shall be free of enlarged soft, porous, or seedy mammary tissue, the pizzle recess in barrow bellies, scores exceeding 1/4 inch in depth and other damage affecting the end product. There shall be no area of exposed fat on the face of the belly below the scribe line which exceeds 4 square inches.

Item No. 409 - Belly, Skinless—The skinless belly is the same as Item No. 408 except that it must have the skin removed leaving a smooth skinned surface free of hair roots.

Item No. 410 - Loin—The loin is that portion of a side remaining after removal of the shoulder, ham, belly, and fat back, leaving the blade bone portion with its overlying flesh and at least 2 sacral, but no caudal vertebrae in the loin. The lines of separation of the shoulder and ham from the loin shall be reasonably straight and reasonably perpendicular to the split surface of the backbone. The medial ridge of the blade bone, when present, shall show no enlargement of the outer edge. The line of separation of the loin from the belly must be reasonably straight extending from a point on the first rib of the loin which is not more than 2-1/4 inches from the junction of the foremost rib and the foremost thoracic vertebrae to a point on the ham end which is immediately ventral to the major tenderloin muscle. The fleshy side must be fairly smooth with a well arched, convex surface extending from a point close to the cut tip ends of the ribs to a point close to the outer extremities of the thoracic vertebrae.

This smoothness and contour must continue over the rest of the loin. The false lean over the blade end must be exposed lengthwise with the loin for a distance of at least 4 inches. The fat shall not exceed 1/4 inch in thickness over the major loin muscles, except in the hip bone area. Lumbar and pelvic fat shall not exceed 1/2 inch in thickness at any one point. Loins with broken ribs and loins which have had more than a slight amount of lean removed from the major loin muscles are not acceptable. The diaphragm and hanging tender shall be removed from Selection No. 1 loins.

Item No. 411 - Loin, Bladeless—The bladeless loin is prepared from Item No. 410. The blade bone and related cartilage and overlying flesh shall be removed.

Item No. 412 - Loin, Center-Cut—The center-cut loin is prepared from Item No. 410. The shoulder end shall be removed by a straight cut approximately perpendicular to the split surface of the back bone and to the length of the loin and which leaves not more than 8 ribs on the center-cut loin. The ham end of the loin is removed by a straight cut approximately perpendicular to the split surface of the back bone and to the length of the loin and which passes through a point immediately anterior to the hip bone cartilage.

Item No. 413 - Loin, Boneless—The boneless loin is prepared from Item No. 410. All bones, cartilage, flesh overlying the blade bone and related cartilage, intercostal meat, diaphragm, hanging tender and the tenderloin and surrounding lumbar fat, shall be removed.

Item No. 413A - Loin, Boned and Tied—This item is prepared from Item No. 413. The boneless loin shall be separated into two approximately equal sections by a straight cut at an approximate right angle to the length of the loin. The loin halves shall be reversed, their boned surfaces shall be placed together and shall be tied girthwise. The ends shall be trimmed so that their surfaces are straight and approximately perpendicular to the length of the loin and to the outer skin surface.

Item No. 414 - Canadian Back—The Canadian back includes the *longissimus dorsi*, *spinalis dorsi*, *multifidus dorsi*, *complexus*, and *gluteus medius* muscles of Item No. 410 after the ham end has been removed by a straight cut approximately perpendicular to the split surface of the back bone and to the length of the loin through a point immediately anterior to the hip bone cartilage. All other muscles, bones, cartilage, and surface fat in excess of 1/4 inch shall be removed. The Canadian back shall be reasonably square at both ends.

Item No. 415 - Tenderloin—The tenderloin is removed from the loin intact. The side strip muscle and all glandular and bloody tissue shall be moved. Surface fat shall not exceed 1/8 inch in thickness.

Item No. 416 - Spareribs—Spareribs are the intact rib section removed from the belly and may include portions of the costal cartilages with or without portions of the breast bone and diaphragm.

Item No. 416A - Spareribs, Breast Off—This item is the same as Item No. 416 except that the sternum and costal cartilages shall be removed. When specified, the rib section shall be separated into two approximately equal portions by a lengthwise cut.

Item No. 417 - Shoulder Hocks—Hocks are prepared from shoulders or picnics. They shall be cut through or above the knee joint towards the elbow and shall be at least 2 inches in length.

Item No. 418 - Trimmings, 90 Percent Lean—Trimmings shall not include jowls.

and diaphragms, and shall be practically free of bone, cartilage, seedy parts of bellies, wet mammary tissue, skin, and lymph glands, except for these glands which normally form a part of the trimmings. The visually determined fat content of the trimmings shall not exceed 10 percent.

Item No. 419 - Trimmings, 80 Percent Lean—This item is the same as Item No. 418 except that the visually determined fat content of the trimmings shall not exceed 20 percent.

Item No. 420 - Front Feet—Feet are removed from the shoulder at least slightly above the knee joint. They shall be practically free of hair and hair roots.

Item No. 421 - Neck Bones—The neck bones are cut in the conventional manner. A few irregularly split neck bones are permissible in a lot. The bulk, however, shall consist of those including major portions of most of the cervical vertebrae and not less than one nor more than three thoracic vertebrae and adjoining ribs, with or without portions of adjacent sternebrae or spinous extensions. The product shall carry the typical amount of lean as customarily produced from practicable cutting and/or trimming.

Item No. 422 - Back Ribs—Back ribs shall consist of the rib bones and related intercostal meat portion of a loin. The vertebrae shall be removed. Each back rib section shall be intact and shall include portions of at least 11 ribs. If present, bloody portions along the inside of the ribs shall be removed.

Item No. 423 - Country Style Ribs—Country style ribs shall be prepared from the shoulder end of a loin and shall include at least 3 ribs. The blade bone and overlying flesh shall be removed. The chine bone, or bodies of the thoracic vertebrae, shall be removed by a straight cut along a line at which the vertebrae join the feather bones. The country style rib shall be separated into 2 approximately equal portions by cutting through the flesh in the area where the chine bone was removed. This cut shall leave the feather bones in one portion and the rib bones in the other. Both portions shall be packaged in the same container.

DETAILED REQUIREMENTS FOR PORTION-CUT PRODUCTS

Item No. 1400 - Filets—Filets shall be prepared from hams, shoulders, picnics, Boston butts, and/or loins (including shoulder and ham ends of loins). All bones, cartilage, skin, loosely attached lean or fat, tendons, ligaments and membranous tissue shall be removed. If specified, the filets may be cubed, once only, through machines designed for this purpose. Knitting of two or more pieces of meat is not acceptable. Surface and seam fat shall not exceed 1/4 inch in thickness at any one point. This measurement shall be made prior to cubing.

Item No. 1406 - Boston Butt Steaks—This item is prepared from Item No. 406.

Item No. 1407 - Shoulder Butt Steaks—This item is prepared from Item No. 407.

Item No. 1410 - Chops—This item is prepared from Item No. 410. The diaphragm and hanging tender shall be removed prior to slicing. The loin must be cut from end to end into chops.

Item No. 1410A - Chops with Pocket—This item is prepared from Item Nos. 411 or 412. If prepared from Item No. 411, the ham end of the loin shall be removed immediately anterior to the hip bone cartilage prior to slicing. On chops not containing tenderloin, the chine bone shall be removed by a cut which removes practically all the spinal cord groove. The pocket

formed in the chop must be made by cutting into the meat from the rib bone side or by cutting into the meat through the surface fat into the fleshy portion of the chop.

Item No. 1410B - Rib Chops with Pocket—This item shall be prepared from the rib section only of Item Nos. 411 or 412. The chine bone shall be removed as described in Item No. 1410A. As specified, each chop shall contain one or more than one rib bone. (Chop thickness shall not be specified). Chops containing only one rib shall include all the intercostal meat between that rib and an adjacent rib. The pocket shall be formed by cutting into the meat close to the rib on the side which includes the intercostal meat. Chops containing more than one rib shall have the pocket formed by cutting into the meat between the rib bones.

Item No. 1411 - Chops, Bladeless—This item is prepared from Item No. 411. The loin shall be sliced from end to end into chops.

Item No. 1412 - Chops, Center Cut—This item is prepared from Item No. 412. The center cut loin shall be sliced from end to end into chops.

Item No. 1412A - Chops, Center Cut, Special—This item is prepared from Item No. 412. The tenderloin shall be removed and the chine bone shall be removed by a cut which removes practically all the spinal cord groove.

Item No. 1412B - Chops, Center Cut, Boneless—This item is prepared from Item No. 412. The tenderloin and all bones and cartilage shall be removed.

Item No. 1413 - Chops, Boneless—This item is prepared from Item No. 413.

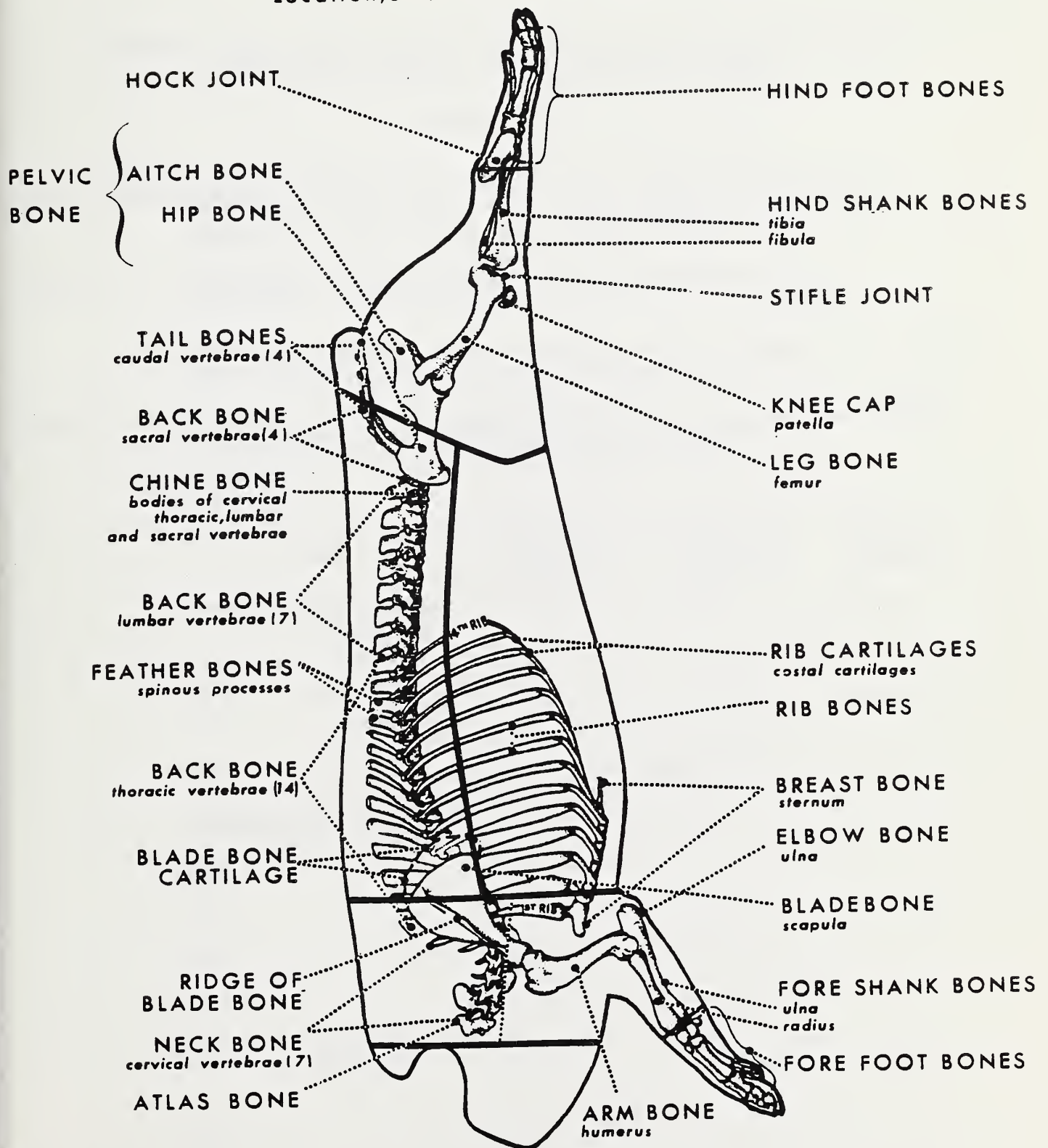
Item No. 1495 - Pork for Chop Suey—Pork for chop suey may be prepared from any boneless meat from the Ham, Skinned - Item No. 402, or Boston Butt - Item No. 406. Cuts used must be separated into their major muscles by cutting through the natural seams. Practically all surface and seam fat must be excluded. In addition, when present, the following must be removed and excluded: Bone, skin, opaque membranous tissue, cartilage, periosteum, and major ligaments and tendons. The boneless meat shall be ground through a plate with 3/4 inch holes in a conventional grinder having a sharp, 3-bladed knife or it may be machine-cut into pieces of a comparable approximate size as produced by grinding. However, if specified by the purchaser, the meat must be hand cut into pieces of the size desired.

Item No. 1496 - Ground Pork—Ground pork shall be prepared from Item Nos. 403, 404, 405, or 406. Meat with dark discoloration, all bones, cartilage, backstrap, and exposed large blood vessels shall be removed. The visual fat content of the boneless meat, determined prior to grinding, shall not exceed 25 percent. After being prepared as described above, the boneless meat shall be ground at least once through a plate having holes no larger than 3/4 inch in diameter (or it may be otherwise reduced in size provided the texture and appearance of the product after final grinding is typical of ground pork prepared by grinding only.) Final grinding shall be through a plate having holes 3/16 inch in diameter. The meat shall be thoroughly blended prior to and subsequent to each reduction in size except that the ground pork shall not be mixed after the final grinding. The boneless meat shall not exceed 50°F. during grinding and packaging. The ground pork shall be packaged in the amount specified by the purchaser and packed immediately upon completion of grinding.

Item No. 1496A - Ground Pork Patties—This item shall be prepared from Item No. 1496. The ground pork shall be mechanically formed into round patties of the size specified. They shall be arranged in stacks with each patty separated from adjacent patties by two sheets of waxed patty paper except that when patties are individually quick-frozen, the patty paper may be excluded. When producing patties to be delivered frozen, frozen boneless meat, previously accepted in the fresh state, may be used.

PORK SKELETAL CHART

Location, Structure and Names of Bones



Courtesy of National Live Stock and Meat Board

AMENDMENT NO. 1

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH PORK EFFECTIVE JANUARY 1975--APPROVED BY USDA

August 1978

Cover page Delete reference to Agricultural Marketing Service, Livestock Division and substitute Food Safety and Quality Service, Meat Quality Division.

Page vi MATERIAL, line 4, after the 2nd sentence, add the following new sentence:

"The pork shall be practically free of blood clots, bone dust, ragged edges, and discoloration."

Page vii Make the following additions and changes to the INDEX OF PRODUCTS AND WEIGHT AND RANGE TABLE.

New Items

Item No.		Range A (pounds)	Range B (pounds)	Range C (pounds)
"402C	Ham, Boned and Tied, Special	6-8	8-10	10-12
415A	Tenderloin, Special	1/2 to 3/4	3/4 to 1	1 to 1-1/2
435	Diced Pork	Amount as Specified		

Changes to Item No.

407		1-1/2 to 3		
415		1/4 to 1/2		
416		1-1/2 to 3		
416A		1/2 to 2-1/2	2-1/2 to 4	
417	Shoulder "Hocks"	1/2 to 1	1 to 1-1/2	1-1/2 to 2-1/2
420		3/4 to 1-1/2		
421		3/4 to 1		
422			1-1/2 to 3	

Page 1 Item No. 401, line 10, after "measured" insert "at the skin edge."

Page 2 After Item No. 402B, add new item:

"Item No. 402C - Ham, Boned and Tied, Special--This item is the same as Item No. 402B except that the popliteal gland and surrounding fat in excess of 1/4 inch shall be removed."

Item No. 403, lines 3 and 4, delete 2nd sentence and substitute:

"The outer tip of the subscapularis muscle shall not extend past the dorsal edge of the base of the medial ridge of the blade bone."

Page 3 Item No. 410, lines 5 and 6, delete the 3rd sentence and substitute:

"The outer tip of the subscapularis muscle shall not extend past the center of the base of the medial ridge of the blade bone."

Page 4 Item No. 415, line 2 delete "moved" and substitute "removed."

After Item No. 415, add new item:

"Item No. 415A - Tenderloin, Special--This is the same as Item No. 415 except that the side strip muscle may remain, if firmly attached. Surface fat shall not exceed 1/8 inch in thickness."

Page 5 After Item No. 423, add new item:

"Item No. 435 - Diced Pork--This item may be prepared from any one or combination of fresh-chilled hams, loins, shoulders, shoulder picnics, and Boston Butts which will produce diced pork which will comply with the end product requirements. Meat from shanks is not acceptable. Cuts having coarse-textured dark meat or other characteristics as typically produced from aged sows, stags, and boars are not acceptable. Cuts used must be separated into their major muscles by cutting through the natural seams. Practically all surface and seam fat shall be removed. Bone, skin, heavy connective tissue, cartilage, major ligaments, and tendons shall also be removed.

After being prepared as described above, the boneless meat shall be either hand-diced or processed through a dicing machine (grinding not permitted). Not less than 75 percent, by weight, of the resulting pieces shall be of a size which is equivalent of not less than a 3/4 inch cube or not more than a 1-1/2 inch cube and no

individual surface on these pieces shall exceed 2-1/2 inches in length.

For machine-diced product requiring one hour or more to produce, compliance with the piece-size requirement shall be determined by the following "Online" sample plan: The grader shall examine an approximate 5-pound sample selected during each 20 minutes of production. Failure of a sample to meet the piece-size requirement shall cause rejection of all product produced after the last acceptable sample was drawn.

Following a rejection, more frequent samples may be taken at the request of the contractor until an acceptable sample is drawn. Rejected product may be reworked and reoffered for acceptance.

For machine-diced product requiring less than one hour to produce, for hand-diced product, and for reworked product, the grader shall sample the amount of product he feels necessary to determine that the entire lot complies with the piece-size requirement.

Diced pork for delivery in the frozen state may be produced by the following methods: Properly prepared, previously accepted, boneless pork may be promptly frozen and subsequently made into diced pork by sawing or by machine dicing. Frozen diced pork shall be packaged and packed and returned to the freezer prior to its thawing.

For product produced from such frozen pork which requires 1 hour or more to produce, compliance with the piece-size requirements may be determined under the online sampling plan as described previously or, as an alternative, filled shipping containers of the finished product may be examined under the stationary lot sampling plan included herein. Diced pork produced from fresh, chilled pork may also be examined under this sampling plan.

All examinations performed for specification requirement compliance under this stationary lot examination shall be done on a production lot basis. A production lot is (1) a quantity of finished product designated by the contractor as the unit for determining compliance with specification requirements or (2) that portion of a contractor designated production lot which the USDA meat grader designates as a unit for determining compliance if, in his opinion, that portion is or may be out of compliance with one or more specification requirements. In no case shall a production lot exceed the amount of finished product produced in a single workshift. Each production lot shall be identified in a manner satisfactory to the USDA meat grader and such

identification shall appear on all shipping containers in the lot.

<u>Lot Size</u> (pounds)	<u>Sample Size</u> (number of boxes)	<u>Subsample Weight</u> (approximately)
Less than 1000	2	2 lbs. 8 ozs.
1000 - 2000	4	" "
2001 - 3000	6	" "
3001 - 4500	8	" "
4501 - 6000	10	" "
6001 - 8000	12	" "
8001 - 10,000	14	" "
More than 10,000		

One subsample shall be drawn from each randomly selected sample box. After withdrawal of subsamples, the contractor shall make correct fills of the boxes sampled. Diced pork shall be completely thawed prior to examination. Water shall not come in contact with the meat during thawing. Thawed diced pork shall not be included in the lot. Acceptance criteria shall be the same as specified above. Failure of any subsample to comply with the piece-size requirements will cause rejection of the entire lot.

For product produced from frozen pork which requires less than 1 hour to produce, the grader shall follow the applicable procedures specified for chilled product produced by machine-dicing."

This amendment is effective September 3, 1978.

Acting Director, Meat Quality
Division

AMENDMENT NO. 2

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH PORK
APPROVED BY USDA EFFECTIVE JANUARY 1975

SEPTEMBER 1979

This amendment is issued to modify the DESCRIPTION OF SELECTION AND MATERIAL sections.

Pages iii, iv, and v, DESCRIPTION OF SELECTION section, delete the entire section and substitute the following:

"Selection No. 1--Hams, shoulders, shoulder picnics, loins, and Boston butts of selection No. 1 are meaty, based on a composite evaluation of thickness of muscling and quantity of intermuscular and external fat. Although various combinations of thickness of muscling and quantities of intermuscular and external fat will meet the minimum requirements for meatiness, cuts usually are at least moderately thick and plump throughout, have at least moderately thick muscling, and not more than a small amount of intermuscular fat nor more than a small amount of external fat on the unskinned portions of skinned hams and shoulders. The lean must be at least slightly firm; possess a bright, reasonably uniform color (slightly two-toned is permissible), ranging from light pink to light red; have a fine, smooth, texture, and exhibit no evidence of the pale, soft, exudative (PSE) condition.

Selection No. 1 bellies must indicate at least a slightly high ratio of lean to fat and have a uniform distribution of fat and lean layers. They may vary in thickness from slightly thick to moderately thick and must be moderately uniform in thickness and moderately long in relation to their width.

The exterior fat on the fresh pork cuts must be white and at least slightly firm. The skin must be thin, smooth, and pliable. The pork cuts must be free from bruises and odors foreign to fresh pork. They must be practically free from scores, mis-cuts, abrasions, hook marks, blemishes, hair roots, or other defects.

Selection No. 2--Hams, shoulders, shoulder picnics, loins, and Boston butts of Selection No. 2 have a moderate degree of meatiness, based on a composite evaluation of thickness of muscling and quantity of intermuscular and external fat. Although various combinations of thickness of muscling and quantities of intermuscular and external fat will meet the minimum requirements for meatiness, cuts usually are at least slightly thick and plump throughout with slightly thick muscling and a slightly high to high amount of intermuscular fat with a slightly high to high

amount of external fat on the unskinned portions of skinned hams and shoulders. The lean must be at least slightly firm, possess a bright, reasonably uniform color (slightly two-toned is permissible) ranging from light pink to light red; have a fine, smooth texture; and exhibit no evidence of the pale, soft, exudative (PSE) condition.

Selection No. 2 bellies must indicate a slightly low to moderately low ratio of lean to fat, except that bellies with a higher ratio of lean to fat but which are not eligible for Selection No. 1 because of thickness, uniformity, or length-width proportions may be included provided they meet those requirements for Selection No. 2. They usually are moderately thick or thick and usually have moderately thick fat deposits between the layers of lean. They may be uneven in thickness and may be slightly short in relation to their width.

The exterior fat on the fresh pork cuts must be white and at least slightly firm. The skin must be thin, smooth, and pliable. The pork cuts must be free from bruises and odors foreign to fresh pork. However, pork cuts with slight scores, abrasions, hook marks, or other cuts which do not interfere with the making of satisfactory slices, will be acceptable. Pork cuts showing only a slight amount of hair roots, or which are only slightly miscut or mis-shapen may be included.

Page vi. MATERIAL section, add the following new paragraphs:

"When present, the bones must not be ossified to a degree that cartilage is not in evidence in the pelvic, spinal, and scapular sections of the pork cuts. The split chine bone, spinous processes, and cross-cut sections of bones must be porous and not appreciably brittle or flinty. The color of the bones must be in the range from red to deep pink. The exterior surfaces of the rib bones must show at least some redness.

Pork cuts having dislocated or enlarged joints or other malformations will not be acceptable."

This amendment is effective immediately.

Acting Director, Meat Quality
Division

AMENDMENT NO. 3

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH PORK
APPROVED BY USDA EFFECTIVE JANUARY 1975

MARCH 1980

Page iii, after the PORTION CUT THICKNESS TOLERANCES section, add the following new section:

"FAT LIMITATIONS

Defatting shall be accomplished by smoothly removing the fat, following the contour of the underlying muscle surface. Beveling of the edges, only, is not acceptable. In determining the maximum thickness of fat at any point on cuts, chops, and roasts which have an evident, natural depression into the lean, only the fat above the portion of the depression which is more than 0.5 inch (12.7 mm) in width will be considered. When false lean is exposed maximum thickness of fat shall not be measured closer than 0.8 inch (20.3 mm) to the false lean."

Page viii, make the following addition to the INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE:

New Item						
Item No.	Product	3 ozs.	4 ozs.	5 ozs.	6 ozs.	8 ozs.
"1413A	Chops, Boneless, Double		X	X	X	X"

Page 6, After Item No. 1413, add new item:

"ITEM NO. 1413A - CHOPS, BONELESS, DOUBLE--This item is prepared from boneless pork loins. Pork loins examined in the bone-in state shall have the ham and shoulder separated from the loin as described in Item 410. Pork loins examined in the boneless state; the ham end shall contain not more than 4 inches (10.2 cm) of lean posterior to the pocket remaining after the removal of the hip bone. On the shoulder end, the cross sectional area of the Longissimus dorsi shall be larger than the combined cross sectional area of the Semispinalis captis and the Splenius. All bones, cartilages, false lean, flesh overlying the blade bone, the Latissimus dorsi, and the tenderloin shall be removed and excluded. The belly side shall be removed adjacent to the outer tip of the Longissimus dorsi.

Each boneless loin shall be cut into two approximate equal halves by a straight cut reasonably perpendicular to the long axis of the loin. The fat thickness, determined on the end item, shall not exceed 0.8 inch (20.3 mm) at any point and shall not exceed 0.5 inch (12.7 mm) average. Powdered vital wheat gluten or other binding agents providing satisfactory finished product shall be used to bind together the boned (lean) surface of each half of the loin. The loin halves shall be reversed and their boned surfaces

placed together. The loins shall then be stuffed into casings or wrapped in a manner to prevent freezer burn and molded or shaped for desired slice weight and thickness.

The pork loins shall be sliced, packed, and returned to the freezer in such time as to preclude thawing. Unless otherwise specified, the chops shall weigh not less than 4.5 ounces (127.6 g) and not more than 5.5 ounces (155.9 g) and shall be not less than 0.5 inch (12.7 mm) and not more than 0.9 inch (22.9 mm) thick. Unless otherwise specified, the end chops shall weigh not less than 4 ounces (113 g) and not more than 6 ounces (170 g) and shall be not less than 0.4 inch (10.2 mm) or more than 0.9 inch (22.9 mm) thick. Each chop shall contain two full-cut, intact boneless loin slices and the sliced surfaces shall contain at least 75 percent lean tissue.

Not more than 10 percent, by weight, of an individual shipping container shall contain end slices. The number of containers examined for compliance with this requirement shall equal the number of containers selected for examination under Table I. The finding of end slices in any one shipping container exceeding the 10 percent by weight requirement, shall cause rejection of the lot. The percent shall be rounded to the nearest whole percent.

The examination of boneless chops shall be based upon the examination criteria set forth in Table I. The defect classifications are set forth in Table II. No more than 10 chops may be selected from an individual shipping container for examination under Table II. For reexamination, the sampling plan used shall be the one in Table I designed for the next larger lot size than the one corresponding to the size of the reconstituted lot. Product shall not be reexamined more than one time.

Table I. Sampling Plans for Item No. 1413A

<u>Lot Size</u> (Pounds)	<u>Sample Size</u> (No. of Chops)	<u>Defect Categories</u>			
		<u>Major</u>		<u>Minor</u>	
		AC	RE	AC	RE
500 or less (26.8 kg)	20	1	2	3	4
501 to 1200 (227.6 to 544.3 kg)	32	2	3	5	6
1201 to 3200 (544.8 to 1451.5 kg)	50	3	4	7	8
3201 to 10,000 (1452 to 4536 kg)	80	5	6	10	11
Over 10,000 (4536 kg)	125	7	8	14	15
Resubmitted Lots (Over 10,000 (4536 kg)	200	10	11	21	22

Table II - Examination of the Boneless Pork Chops

<u>Major</u>	<u>Category</u>	<u>Minor</u>	<u>Defects</u>
151			Presence of soft (non-frozen) areas.
152			Evidence of thawing and refreezing.
153			Not two full-cut intact slices (except for end slices).
154			Cracked, fractured in part, or partially separated. ¹
155			Surface fat exceeds 0.5 inch (12.7 mm) average thickness.
156			Surface fat exceeds 0.8 inch (20.3 mm) at any point. ²
157			Presence of end slices consisting of only one portion of loin.
158			Presence of end slices made of more than two portions of loin.
159			Not cut at right angles to the long axis of the loin.
		201	Not cylindrical in shape (may be slightly oval in cross-section).
		202	Weight of other than end slices; more than 5.5 ounces (155.9 g) or less than 4.5 ounces (127.6 g)
		203	Weight of end slices; more than 6 ounces (170 g) or less than 4 ounces (113 g).
		204	Thickness of other than end slices; more than 0.9 inch (22.9 mm) or less than 0.5 inch (12.7 mm)
		205	Thickness of end slices; more than 0.9 inch (22.9 mm) or less than 0.4 inch (10.2 mm).
		206	Slice surface having less than 75% lean tissue.
		207	Presence of dehydration and/or freezer burn exceeding 0.5 square inch (2.5 sq. cm).

1/ A slice shall be considered cracked or fractured when two or more separate or hinged pieces of meat result from that slice, when suspended from any portion of the slice.

2/ Scored one per chop.

This amendment is effective immediately.

Acting Director, Meat Quality
Division

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Livestock, Meat, Grain, and Seed Division
Washington, D.C. 20250

July 1982

AMENDMENT NO. 4

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH PORK
APPROVED BY USDA EFFECTIVE JANUARY 1975

This amendment is issued to notify the material requirements for diced pork.

Page 5, Item No. 435-Diced Pork (refer to AMENDMENT NO. 1), delete sentence 1 and substitute:

"This item may be prepared from any combination of carcasses or cuts which will produce diced pork complying with the end product requirements."

This amendment is effective August 2, 1982.

Thomas H. Porter, Director
Livestock, Meat, Grain, and
Seed Division

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Livestock, Meat, Grain, and Seed Division
Washington, D.C.

August 1982

AMENDMENT NO. 5

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR FRESH PORK
APPROVED BY USDA EFFECTIVE JANUARY 1975

This amendment is issued to add a new item and change the item number and name for an existing item.

Page vii, INDEX OF PRODUCTS AND WEIGHT RANGE TABLE, add the following new item:

Item No.	Product	Range A	Range B	Range C
"413B	Loin, Boned and Tied, Special	4-6	6-8	8-10"

Page viii, INDEX OF PORTION-CUT PRODUCTS AND WEIGHT RANGE TABLE, delete "1413A Chops, Boneless, Double..." (refer to AMENDMENT No. 3) and substitute "1413B Chops, Boneless, Double, Special."

Page 4, after Item No. 413A, add the following new item:

"Item No. 413B - Loin, Boned and Tied, Special--This item is prepared from boneless pork loins. Pork loins examined in the bone-in state shall have the ham and shoulder separated from the loin as described in Item No. 410. For pork loins examined in the boneless state: 1) the ham end shall contain not more than 4.0 inches (10.2 cm) of lean posterior to the pocket remaining after the removal of the hip bone; and 2) on the shoulder end, the cross sectional area of the Longissimus dorsi shall be larger than the combined cross sectional area of the Semispinalis capitis and the Splenius. All bones, cartilages, false lean, flesh overlying the blade bone, the Latissimus dorsi, and the tenderloin shall be removed and excluded. The belly side shall be removed adjacent to the outer tip of the Longissimus dorsi and the Gluteus medius.

Defatting shall be accomplished by smoothly removing the fat, following the contour of the underlying muscle surface. Beveling of the edges only is not acceptable. The fat thickness shall not exceed 0.3 inch (7.6 cm) at any point on the loin with the exception of the hip bone area where the fat thickness shall not exceed 0.5 inch (12.7 cm). Each boneless loin shall be cut into two approximate equal halves by a straight cut reasonably perpendicular to the long axis of the loin. Powdered vital wheat gluten or other binding agents which provide a satisfactory finished product shall be used to bind together the boned (lean) surface of each half of the loin. The loin halves shall be reversed and their boned surfaces placed together. The ends shall be trimmed so that their surfaces are straight and approximately perpendicular to the length of the loin and to the outer skin surface. The loins shall then be stuffed into a stretchable netting."

Page 6, Item No. 1413A - Chops, Boneless, Double (refer to AMENDMENT No. 3) delete "Item No. 1413A - Chops, Boneless, Double..." and substitute "Item No. 1413B - Chops, Boneless, Double, Special".

TABLE I, delete "...Item No. 1413A" and substitute Item No. 1413B".

This amendment is effective December 20, 1982.

Thomas H. Porter, Director
Livestock, Meat, Grain, and
Seed Division

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR CURED, CURED AND SMOKED, AND FULL-COOKED PORK PRODUCTS

APPROVED BY USDA

These specifications contain descriptions of various cured and otherwise processed pork products customarily purchased by large-volume users, agencies, and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs these specifications must be used with "Institutional Meat Purchase Specifications-General Requirements", which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef; Fresh Lamb and Mutton; Fresh Veal and Calf; Fresh Pork; Cured, Dried, and Smoked Beef Products; Edible By-Products; and Sausage Products. Copies of specifications for these products may be purchased from the Superintendent of Documents.

**UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND QUALITY SERVICE
MEAT QUALITY DIVISION
Washington, D.C.**

EFFECTIVE JANUARY 1979

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Range A	Range B	Range C
		<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
500	Ham, Short Shank (Cured)	10-14	14-17	17-20
501	Ham, Short Shank (Cured and Smoked)	10-14	14-17	17-20
502	Ham, Skinned (Cured)	10-14	14-17	17-20
503	Ham, Skinned (Cured and Smoked)	10-14	14-17	17-20
504	Ham, Skinless (Cured and Smoked) Partially Boned	8-10	10-12	12-14
505	Ham, Skinless (Cured and Smoked) Completely Boneless	8-10	10-12	12-14
505A	Ham, Skinless, Boned, Rolled, and Tied (Cured and Smoked)	8-10	10-12	12-14
506	Ham, Skinned (Cured and Smoked) Fully-Cooked, Dry Heat	10-14	14-17	17-20
507	Ham, Boneless, Skinless (Cured and Smoked) Fully-Cooked, Dry Heat	8-10	10-12	12-14
508	Ham, Boneless, Skinless (Cured) Pressed, Fully-Cooked, Moist Heat	8-10	10-12	12-14
509	Ham, Boneless, Skinless (Cured and Smoked) Pressed, Fully-Cooked Moist Heat	8-10	10-12	12-14
515	Shoulder, (Cured)	8-12	12-16	16-20
516	Shoulder, (Cured and Smoked)	8-12	12-16	16-20
517	Shoulder, Skinned (Cured)	8-12	12-16	16-20
518	Shoulder, Skinned (Cured and Smoked)	8-12	12-16	16-20
525	Shoulder, Picnic (Cured)	4-6	6-8	8-12
526	Shoulder, Picnic (Cured and Smoked)	4-6	6-8	8-12
527	Shoulder, Picnic (Cured and Smoked) Boneless, Skinless, Rolled and Tied	6-8	8-10	10-12
530	Shoulder Butt, Boneless (Cured and Smoked)	1.5 to 3	3-5	
535	Belly, Skin-On (Cured)	10-12	12-14	14-16
536	Bacon, Slab (Cured and Smoked) Skin-On	10-12	12-14	14-16
537	Bacon, Slab (Cured and Smoked) Skinless, Formed	10-12	12-14	14-16
539	Bacon, Sliced (Cured and Smoked) Skinless	Number of Slices per pound (18-22; 22-26; 26-30; 28-32, or as specified)		
541	Bacon, Sliced (Cured and Smoked) Ends and Pieces	5 and 10 pound containers, as specified		
545	Loin, (Cured and Smoked)	10-14	14-17	17-20
546	Loin, Bladeless (Cured and Smoked)	10-14	14-17	17-20
550	Canadian Back (Cured and Smoked) Un sliced	3-4	4-5	5-6
551	Canadian Style Bacon (Cured and Smoked) Sliced	5 and 10 pound containers as specified		
555	Jowl Butts, Cellar Trim (Cured)	1 to 2.5	2.5 to 4	
556	Jowl Squares (Cured and Smoked)	0.8 to 2	2-3	
558	Spareribs (Cured)	1.5 to 3	3-5	5-up
559	Spareribs (Cured and Smoked)	1.5 to 3	3-5	5-up
560	Hocks, Shoulder (Cured)	0.5 to 1	1 to 1.5	1.5 to 2.5
561	Hocks, Shoulder (Cured and Smoked)	0.5 to 1	1 to 1.5	1.5 to 2.5
562	Fatback (Cured)	6-8	8-10	10-12
563	Feet, Front (Cured)	0.8 to 1.5		

ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER

1. Selection: See Description of Selection Section

Selection Number 1.

Selection Number 2.

(Not applicable to jowl butts, jowl squares, spareribs, hocks, fatback, and feet.)

2. Weight Range or Size: See Weight Range Table.

3. State of Refrigeration

A - Chilled

B - Frozen

DESCRIPTION OF SELECTIONS

Selection No. 1—Hams, shoulders, shoulder picnics, loins, and shoulder butts of Selection No. 1 are meaty, based on a composite evaluation of thickness of muscling and quantity of intermuscular and external fat. Although various combinations of thickness of muscling and quantities of intermuscular and external fat will meet the minimum requirements for meatiness, cuts usually are at least moderately thick and plump throughout, have at least moderately thick muscling, and not more than a small amount of inter-muscular fat nor more than a small amount of external fat on the unskinned portions of skinned hams and shoulders. The lean meat must be firm and must possess a bright, reasonably uniform cured color (slightly two-toned permissible), and a fine, smooth texture.

Selection No. 1 bacon (slab or sliced) must indicate at least a slightly high ratio of lean to fat and have a uniform distribution of fat and lean layers. Slab bacon may vary in thickness from slightly thick to moderately thick and must be moderately uniform in thickness and be moderately long in relation to width.

The exterior fat on Selection No. 1 pork cuts must be firm, white (except for the cured or well-penetrated smoke color), and reasonably uniform in distribution. The skin must be thin, smooth, and pliable. The pork cuts must be free from bruises, broken bones, dislocated or enlarged joints, or other malformation, odor, or flavor foreign to meat, and practically free from scores, miscuts, abrasions, hook marks, blemishes, hair roots, or other defects.

Selection No. 2—Hams, shoulders, shoulder picnics, loins, and shoulder butts of Selection No. 2 have a moderate degree of meatiness, based on a composite evaluation of thickness of muscling and quantity of intermuscular and external fat. Although various combinations of thickness of muscling and quantities of intermuscular and external fat will meet minimum requirements for meatiness, cuts usually are at least slightly thick and plump throughout with slightly thick muscling and a slightly high to high amount of intermuscular fat with a slightly high to high amount of external fat on the unskinned portions of skinned hams and shoulders. The lean must be firm and must possess a bright, reasonably uniform cured color (slightly two-toned permissible), and a fine, smooth texture.

Selection No. 2 bacon (slab or sliced) must indicate a slightly low to moderately low ratio of lean to fat, except that bacon with a higher ratio of lean to fat but which are not eligible for Selection No. 1 because of thickness, uniformity, or length-width proportions may be included provided they meet those requirements for Selection No. 2. Slab bacon usually is moderately thick or thick and usually has moderately thick fat deposits between the layers of lean. They may be uneven in thickness and may be slightly short in relation to width.

The exterior fat on Selection No. 2 pork cuts must be firm, white (except for the cured or well-penetrated smoke color), and fairly uniform in distribution. The skin must be thin, smooth, and pliable. The pork cuts must be free from bruises, broken bones, dislocated or enlarged joints, or other malformation, odor, or flavor foreign to meat. However, pork cuts with slight scores, abrasions, hook marks, or other cuts which do not interfere with the making of satisfactory slices, will be acceptable. Pork cuts showing only a slight amount of hair roots, or which are only slightly miscut or misshapen may be included.

TRIMMING

Cuts may have a minor amount of trimming done after curing and smoking, and prior to acceptance, as indicated in the examples below. However, cuts which have been excessively trimmed in order to meet specified weights or which do not meet specification requirements for any reason are not acceptable.

Examples of permitted minor trimming.

1. Fat on the butt end of hams and the butt end and sides of shoulders may be beveled to meet specification requirements.
2. Shank end on hams, shoulders, and shoulder picnics may be removed to meet specification requirements.
3. Pelvic fat, loose fat, and ragged edges on the face of a ham may be removed, provided it is done without any scoring of the muscular portion.
4. Edges of slab bacon (skinless or skin-on) for use on slab bacon contracts, and edges of slab bacon to be used in production of sliced bacon may be trimmed to meet specification requirements.

TYING

When tying is required, cuts must be firm and compact and held intact by individual loops of strong twine uniformly spaced at approximately 2-inch intervals girthwise. In addition, some cuts may require tying lengthwise. In lieu of string tying, it is permissible to enclose cuts in a stretchable netting or by any other equivalent method. Purchasers may specify that cuts be tied when this requirement is not specified in the detailed item specification.

FINISHED PRODUCT CHARACTERISTICS

The finished product must be sound and show no evidence of freezing, defrosting, or mishandling, and shall be in excellent condition to the time of delivery. The product must reflect appropriate selection, style, shape, weight range, curing, skinning, boning, defatting, smoking, cooking, packaging, packing, and state of refrigeration (as applicable). In addition, the product must meet other factors of conformance without evidence of faulty workmanship and handling. The color of the lean meat must be fairly uniform and stable, characteristic of well-cured product without evidence of greening, streaking, or other discoloration (a slightly two-toned or iridescent color permissible). The lean meat must possess a fine, smooth texture, and be tender, cohesive, firm or only slightly resilient, but not unduly hard. Items with coarse-textured dark meat or other characteristics indicating that they were produced from aged sows, stags, or boars are not acceptable. Smoked products must have an acceptable flavor and aroma and a fairly uniform, bright, well-penetrated smoked color, and must be free from extraneous material, including encrusted salt and smokehouse residue (except the natural smoke color). The smoked product must be fairly dry on the exterior and interior (including a well-sealed butt on hams not smoked in artificial casings), but not excessively dried or scorched. It must not have more than a very slight amount of dripping or exuding moisture upon appreciable careful hand pressure without damaging the product. Cooked products must be thoroughly cooked and practically free from air holes, pockets of moisture, rendered fat, gelatinous matter, ragged edges, surface strings (except closely tied necessary stitching), and extraneous material, and must be free from fermented or other odor or flavor foreign to meat, rancidity, mold, and other deterioration or damage.

DETAILED REQUIREMENTS

Item No. 500 - Ham, Short Shank (Cured)—The ham is separated from the side by a straight cut approximately perpendicular to the outer skin surface and to a line parallel to the shank bones. This cut passes through a point which is not less than 1.5 inches and not more than 3 inches from the knob of the aitch bone. Approximately half or more of the shank (but not cut beyond the stifle joint) shall be removed by a straight cut made at an approximate right angle to

the shank bones. The tail bones and tail shall be removed. The fat on the face of the ham shall be removed without any appreciable scoring or damage to the muscular portion. Practically all pelvic fat shall be removed. The ham shall be suitably faced with a smooth, well-rounded skin collar extending not more than 2.5 inches inward from the center of the stifle joint and the lymph glands and fat in the flank area must be removed close to the muscles of the ham. The exterior fat thickness of the ham measured directly under the bone at the butt edge shall not exceed that indicated in the following schedule:

Weight Range of Ham	Maximum Fat Thickness	
	Selection No. 1	Selection No. 2
10-14 pounds	1.3 inches	1.8 inches
14-17 pounds	1.5 inches	2 inches
17-20 pounds	1.8 inches	2.3 inches

Item No. 501 - Ham, Short Shank (Cured and Smoked).—The (cured and smoked) short shank ham must conform with the requirements specified for Ham, Short Shank (Cured) - Item No. 500, except that in addition to curing, the ham must be well smoked.

Item No. 502 - Ham, Short Shank, Skinned (Cured).—The skinned, (cured) short shank ham must conform with the requirements specified for a Ham, Short Shank, (Cured) - Item No. 500, except that the ham shall be skinned leaving a well-rounded skin collar not exceeding 20 percent of the distance from the Stifle joint to the butt edge. The skin shall be removed so that the collar line is at a slant of at least 15 to 18 degrees toward the cushion side starting at the flank side leaving the skin collar approximately 1.5 inches longer on the flank edge. Fat remaining on the skinned surface shall not exceed 0.5 inch in depth measured at any point 1.5 inches or more from the edge of the skin collar except that at the tail end of the pelvic area the fat thickness shall not exceed 1 inch. The fat shall be neatly beveled to approximately meet the lean at the butt end.

Item No. 503 - Ham, Short Shank, Skinned (Cured and Smoked).—The skinned (cured and smoked) short shank ham must conform with the requirements specified for Ham, Short Shank, Skinned (Cured) - Item No. 502, except that in addition to curing, the ham must be well smoked.

Item No. 504 - Ham, Skinless, Partially Boned (Cured and Smoked).—The skinless, partially boned ham (cured and smoked) must conform with the requirements specified for Ham, Short Shank (Cured and Smoked) - Item No. 501, except that the ham must be made completely skinless and surface fat in excess of 0.5 inch shall be removed. Fat on the butt end shall be beveled back at least 1 inch from the edge of the lean. All trimming, skinning, and defatting may be accomplished either before or after curing but must be done prior to smoking. The aitch bone and overlying flesh and shank bones must be removed without excessive lacerations or other damage to the ham, leaving the femur bone intact in the ham. The ham must be encased in an artificial casing to produce a smooth, plump, elongated, oval-shaped, skinless, partially boned, cured and smoked ham.

Item No. 505 - Ham, Skinless, Completely Boneless (Cured and Smoked).—The skinless, completely boneless (cured and smoked) ham must conform with the requirements specified for Ham, Skinless, Partially Boned (Cured and Smoked) - Item No. 504, except that the ham must be made completely boneless. The femur bone must be removed closely without unduly lacerating or damaging the ham. Shank meat which is naturally attached may be included and shall be folded into the femur bone cavity as a plug. The prepared cured ham must be encased in a close-fitting, artificial casing of good transparency showing the exterior characteristics of the smoked ham. The casing must be of suitable size, strength, and quality to withstand conventional careful

handling of the product to the time of delivery. The ham must be handled and placed in the casing with the major muscle fibers running parallel (lengthwise) with the casing so that customary slicing will be at approximate right angles thereto and in a manner to result in an acceptable, smooth, compact, cohesive (proper sliceability), ham of good symmetry having a cylindrical, oval, or elliptical shape and without detrimental recesses (pockets of air, moisture, rendered fat), in the finished product (close string stitching permissible). The encased ham may be smoked in stockinettes, or a similar hanging device.

Item No. 505A - Ham, Skinless, Boned, Rolled, and Tied (Cured and Smoked).—The skinned, boned, rolled, and tied (cured and smoked) ham is the same as Ham, Skinless, Completely Boneless (Cured and Smoked) - Item No. 505, except that the ham shall not be encased in an artificial casing. The boneless ham shall be rolled and string tied.

Item No. 506 - Ham, Skinned (Cured and Smoked), Fully-Cooked, Dry Heat.—The skinned (cured and smoked), fully-cooked ham must conform with the requirements for Ham, Short Shank, Skinned (Cured) - Item No. 502, except that in addition to curing, the ham must be smoked and cooked by the dry-heat method. All trimmings, skinning, and defatting may be accomplished before or after curing, but must be done prior to smoking and cooking so that the finished product will be well trimmed, shapely, smooth, and uniformly smoked on the entire surface. Promptly after smoking and cooking, the fully-cooked ham must be handled as necessary to remove rendered surface fat and extraneous matter. After cooking, the fully-cooked ham must be properly chilled prior to wrapping in suitable moisture and grease resistant paper of good quality.

Item No. 507 - Ham, Boneless, Skinless (Cured and Smoked), Fully-Cooked, Dry Heat.—The boneless, skinless (cured and smoked), fully-cooked ham must conform with the requirements for Ham, Skinless Completely Boneless (Cured and Smoked) - Item No. 505, except that the ham must be fully-cooked by the dry-heat method. The dry-heat, fully-cooked ham must be stuffed into a close, smooth-fitting artificial casing either prior to or after smoking and cooking. Dissolved, clear gelatin may be used to momentarily dip the ham to facilitate stuffing in the casing.

Item No. 508 - Ham, Boneless, Skinless (Cured), Pressed, Fully-Cooked, Moist Heat.—The boneless, skinless (cured), pressed, fully-cooked ham must conform with the requirements for Ham, Skinless Completely Boneless (Cured and Smoked) - Item No. 505, except that the ham must be cured only, and fully-cooked by the moist-heat method. The finished product may be rectangular or pear-shaped, as specified by the purchaser. The moist-heat, fully-cooked ham may be stuffed intact into a close-fitting, artificial casing or may be suitably wrapped to be completely covered with paper, as specified by the purchaser. If artificial casings are specified, the exterior of the encased ham must be practically free of gelatinous material, rendered fat, extraneous matter, appendages, and strings or mechanical fasteners, except as necessary to secure the ends of the tied casing. The external end or surface of the ham may be momentarily dipped in a clear gelatinous solution as may be necessary to facilitate stuffing in the casing.

Item No. 509 - Ham, Boneless, Skinless (Cured and Smoked), Pressed, Fully-Cooked, Moist Heat.—The boneless, skinless, (cured and smoked), pressed, fully-cooked ham must conform to the requirements for Ham, Boneless, Skinless (Cured), Pressed, Fully-Cooked, Moist Heat - Item No. 508, except that in addition to curing, the ham must be smoked in accordance with good commercial practice.

Item No. 515 - Shoulder, (Cured).—The cured shoulder is separated from the side by a straight cut, approximately perpendicular to the outer skin surface, beginning not more than 1 inch posterior to the elbow joint, but not exposing the elbow joint and continuing across the hog side. Not more than a slight enlargement of the medial ridge of the blade bone shall be evident. Meat with dark discoloration, the neckbones, ribs, breast bones, cartilage, intercostal meat, and breast flap shall be removed. The shoulder shall be suitably faced without appreciable scoring or undue removal of lean. The food shall be removed at or slightly above the upper joint of the knee by a

straight cut made at an approximate right angle to the shank bones. Unless otherwise specified, shoulders with shorter shanks (but not cut beyond the elbow joint) will be acceptable. The jowl shall be removed by a straight cut perpendicular to the outer skin surface and approximately parallel to the cut separating the shoulder from the side which leaves not more than 1 inch of the jowl on the shoulder. The fat and skin shall be beveled to approximately meet the lean at the butt end. The exterior fat thickness, measured perpendicular to the skin at the approximate center of the butt, shall not exceed that indicated in the following schedule:

Weight Range of Shoulder	Maximum Fat Thickness	
	Section No. 1	Selection No. 2
8-12 pounds	1.3 inches	1.8 inches
12-16 pounds	1.8 inches	2.3 inches
16-20 pounds	2 inches	2.5 inches

Item No. 516 - Shoulder, (Cured and Smoked).—The cured and smoked shoulder must conform with the requirements specified for Shoulder, (Cured) - Item No. 515, except that in addition to curing, the shoulder must be well smoked.

Item No. 517 - Shoulder, Skinned (Cured).—The partially skinned shoulder (cured) must conform with the requirements specified for a Shoulder (Cured) - Item No. 515, except that the shoulder shall be partially skinned leaving a well-rounded skin collar not exceeding 25 percent of the distance from the elbow joint to the butt edge. The skin shall be removed so that the collar line slants at least 15 degrees ventrally from the elbow side toward the jowl side. Fat remaining on the skinned surface shall not exceed 0.5 inch in depth measured at any point 1.5 inches or more from the edge of the skin collar and shall be beveled to approximately meet the lean at the butt end and on both sides. At least traces of false lean shall be evident on the skinned surface.

Item No. 518 - Shoulder, Skinned (Cured and Smoked).—The skinned shoulder (cured and smoked) must conform with the requirements specified for Shoulder, Skinned (Cured) - Item No. 517, except that in addition to curing, the shoulder must be well smoked.

Item No. 525 - Shoulder Picnic (Cured).—The cured shoulder picnic is that portion of the standard cut Shoulder, (Cured) - Item No. 515, remaining after the removal of the clear plate and the Boston butt. The shoulder picnic is separated from the Boston butt and clear plate by a cut which is reasonably straight and perpendicular to the outside skin surface and approximately parallel to the breast side of the shoulder, leaving not less than 1 nor more than 2 inches of the blade bones (scapula) in the shoulder picnic. The foot must be neatly sawed and cut off in or slightly above the upper joint of the knee at an approximate right angle to the shank bone. Unless otherwise specified, shoulder picnics with shorter shanks (but not cut beyond the elbow joint) will be acceptable. The skin and fat shall be beveled at least the equivalent of the thickness of the fat at the butt end. The exterior fat thickness measured at the skin edge of the bevel directly under the blade bone at the butt edge, shall not exceed the following schedule:

Weight Range of Picnic	Maximum Fat Thickness	
	Selection No. 1	Selection No. 2
4-6 pounds	0.8 inch	1.3 inches
6-8 pounds	0.9 inch	1.4 inches
8-12 pounds	1 inch	1.5 inches

Item No. 526 - Shoulder Picnic (Cured and Smoked).—The shoulder picnic (cured and smoked) must conform with the requirements specified for Shoulder Picnic (Cured) - Item No. 525, except that in addition to curing, the shoulder picnic must be well smoked.

Item No. 527 - Shoulder Picnic (Cured and Smoked) Bnls. Sknls. Rolled and Tied.—The shoulder picnic (cured and smoked) boneless, skinless, rolled and tied must conform with the requirements for Shoulder Picnic (Cured and Smoked) Item No. 526, except that the picnic must be made completely boneless and skinless. The arm bone and blade bone must be removed closely without unduly lacerating or damaging the Shoulder Picnic. Surface fat in excess of 0.5 inch shall be removed. Fat on the butt end shall be beveled back at least 1 inch from the edge of the lean. Shank meat which is naturally attached may be included and shall be folded into the femur bone cavity as a plug. The ham shall be tied girthwise and lengthwise. All trimming, skinning, and defatting may be accomplished either before or after curing but must be done prior to smoking.

Item No. 530 - Shoulder Butt, Boneless (Cured and Smoked).—The boneless shoulder butt is separated from the shoulder as described in Item 525. The skin and underlying fat in excess of 0.3 inch thickness shall be removed. The false lean shall be exposed and the fat shall be beveled to approximately meet the lean on all sides. The blade bone and overlying flesh shall be removed. The trimmed, boneless shoulder butt must be cured and stuffed into a close and smooth-fitting artificial casing either prior to or subsequent to smoking. Dissolved clear gelatin may be used to momentarily dip the product to facilitate stuffing in the casing. Promptly after smoking, the finished product must be handled as necessary to remove grease and extraneous matter.

Item No. 535 - Belly, Skin-On (Cured).—The skin-on (cured) belly is prepared from that portion of the pork side middle remaining after removal of the loin, fat back, and the spareribs. The belly must be boneless and be practically free of cartilages. Any remaining cartilages must be approximately level with or slightly lower than the surface lean and the second longest diameter of any exposed cartilage must not exceed 0.4 inch. Practically all leaf fat and other abdominal surface fat must be removed. The belly must be separated from the fat back on a straight line not more than 1.5 inches beyond the outer-most curvature of the scribe line. The sides of the belly must be reasonably straight and parallel and approximately at right angles to the shoulder end. The ham end of the belly may be cut so that the flank side is approximately 1 inch longer than the fat back side. The belly shall be free of enlarged soft, porous, or seedy mammary tissue, the pizzle recess in barrow bellies, scores exceeding 0.3 inch in depth and other damage affecting the end product. There shall be no area of exposed fat on the face of the belly below the scribe line which exceeds 4 square inches.

Item No. 536 - Bacon, Slab (Cured and Smoked) Skin-on.—The skin-on (cured and smoked) slab bacon must conform with the requirements specified for Belly, Skin-on (Cured) - Item No. 535, except that the belly must be well squared on all edges and with approximately straight and parallel sides and ends (normal receding flesh at the brisket producing a high yield of full-cut acceptable slices.) In addition to curing, the belly must be well smoked.

Item No. 537 - Bacon, Slab (Cured and Smoked), Skinless, Formed.—The skinless slab bacon must conform with the requirements specified for Bacon, Slab (Cured and Smoked) Skin-on - Item No. 536 - except that the finished product must have the skin removed and excluded, leaving a smooth skinned surface free of hair roots. The skin may be removed from the belly or slab bacon, either before or after curing, but must be done prior to smoking. The skinless slab bacon must be well-formed (usually shaped mechanically) after smoking and cooling.

Item No. 539 - Bacon, Sliced (Cured and Smoked) Skinless.—The slices must be produced from skinless slab bacon. The bacon slices, as packaged in individual packages, must be at least reasonably uniform in length, width, and thickness, ranging from 8 to 10 inches in length without underfolding. Unsliced pieces or slices showing hanger comb marks, product residue, punctured or mutilated sections, cracked slices due to hard or granular fat, or those cut on an appreciable slant or bias, or from small or irregular pieces, or which have other serious damage must be

excluded. One part slice may be used per package to make exact weight. The individual packages of sliced bacon must be of the number of slices per pound as specified. (See weight range table.)

Item No. 541 - Bacon, Sliced (Cured and Smoked) Ends and Pieces.—The ends and pieces must be obtained from the regular production of sliced bacon. Frayed, shredded, broken, or otherwise damaged slices; small, unsliced pieces; slices showing string or hanger marks; or slices from small or extreme sections and machine scrap pieces are acceptable.

Item No. 545 - Loin, (Cured and Smoked).—The cured and smoked pork loin is that portion of a side remaining after removal of the shoulder, ham, belly, and fat back, leaving the blade bone portion with its overlying flesh and at least 2 sacral, but no caudal vertebrae in the loin. The lines of separation of the shoulder and ham from the loin shall be reasonably straight and reasonably perpendicular to the split surface of the backbone. The medial ridge of the blade bone, when present, shall show no enlargement of the outer edge. The line of separation of the loin from the belly must be reasonably straight extending from a point on the first rib of the loin which is not more than 2.3 inches from the junction of the foremost rib and the foremost thoracic vertebrae to a point on the ham end which is immediately ventral to the major tenderloin muscle. The fleshy side must be fairly smooth with a well arched, convex surface extending from a point close to the cut tip ends of the ribs to a point close to the outer extremities of the thoracic vertebrae. This smoothness and contour must continue over the rest of the loin. The false lean over the blade end must be exposed lengthwise with the loin for a distance of at least 4 inches. The fat shall not exceed 0.3 inch in thickness over the major loin muscles, except in the hip bone area. Lumbar and pelvic fat shall not exceed 0.5 inch in thickness at any one point. Loins with broken ribs and loins which have had more than a slight amount of lean removed from the major loin muscles are not acceptable. The diaphragm and hanging tender shall be removed from Selection No. 1 loins.

Item No. 546 - Loin, Bladeless (Cured and Smoked).—The bladeless (cured and smoked) loin must conform with the requirements specified for Loin (Cured and Smoked) - Item No. 545, except that the blade bone and related cartilage and the overlying flesh must have been removed and excluded.

Item No. 550 - Canadian Back (Cured and Smoked) Unsliced.—The Canadian back includes the *longissimus dorsi*, *spinalis dorsi*, *multifidus dorsi*, *complexus*, and *gluteus medius* muscles of Item No. 545 after the ham end had been removed by a straight cut approximately perpendicular to the split surface of the back bone and to the length of the loin through a point immediately anterior to the hip bone cartilage. All other muscles, bones, cartilage, and surface fat in excess of 0.3 inch shall be removed. The Canadian back shall be reasonably square at both ends. The finished product may be encased in artificial casings. Dissolved clear gelatin may be used to momentarily dip the product to facilitate stuffing in the casing.

Item No 551 - Canadian Style Bacon (Cured and Smoked) Sliced.—Sliced Canadian style bacon must be produced from cured and smoked Canadian back - Item No. 550. The slices must be reasonably uniform in thickness, and they may range in thickness from seven to nine slices per linear inch. Slicing must be at approximate right angles to the major muscle. Insofar as practical, the slices must be maintained in conventional layers in the same order as produced. Slices showing string or hanger marks; slices from small or irregular end sections; mutilated slices, machine scrap pieces, or other product residue must not be included.

Item No. 555 - Jowl Butts, Cellar Trim (Cured).—Cured jowl butts must be of standard cellar trim with boot jack points and ragged ends smoothly removed and excluded. Slightly irregular trimming is permissible. The product must be free from dropping moisture or exuding moisture upon appreciable hand pressure. Individual pieces of the product delivered dry salted must be coated with clear granulated salt; however, loose and encrusted salt must be removed and excluded. The finished product must not exhibit evidence of over or undercuring, or of improper storage.

Item No. 556 - Jowl Squares (Cured and Smoked).—Jowl squares must be reasonably rectangular in shape and at least reasonably well squared on the sides and ends, being reasonably symmetrical and reasonably smooth on all surfaces. They must be well faced by close removal, before smoking, of surface glandular and loose tissue, and bloody discoloration.

Item No. 558 - Spareribs (Cured).—Cured spareribs are the intact rib section removed from the belly and may include portions of the costal cartilages with or without portions of the breast bone and diaphragm.

Item No. 559 - Spareribs (Cured and Smoked).—The spareribs (cured and smoked) must conform with the requirements specified for Spareribs (Cured) - Item No. 558, except that in addition to curing, the spareribs must be well smoked.

Item No. 560 - Hocks, Shoulder (Cured).—Shoulder hocks are prepared from shoulders or picnics. They shall be cut through or above the knee joint toward the elbow and shall be at least 2 inches in length.

Item No. 561 - Hocks, Shoulder (Cured and Smoked).—The shoulder hocks (cured and smoked) must conform with the requirements specified for Hocks, Shoulder (Cured) - Item No. 560, except that in addition to curing, the shoulder hocks must be well smoked.

Item No. 562 - Clear Fat Back (Cured).—The cured clear fat backs must be produced from the fatty portion of the back after the removal of the loin. They must be relatively short and thick, and the thickness must be relatively uniform throughout. All edges must be reasonably squared. The cured product must be well drained and reasonably free from loose and encrusted salt.

Item No. 563 - Front Feet (Cured).—Feet are removed from the shoulder at least slightly above the knee joint. They shall be practically free of hair and hair roots.

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR CURED, DRIED, AND SMOKED BEEF PRODUCTS APPROVED BY USDA

These specifications contain descriptions of various cured or otherwise processed beef products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs these specifications must be used with "Institutional Meat Purchase Specifications—General Requirements," which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef; Fresh Lamb and Mutton; Fresh Veal and Calf; Fresh Pork; Cured, Cured and Smoked, and Fully Cooked Pork Products; Edible By-Products; and Sausage Products. Copies of Specifications for these products may be purchased from the Superintendent of Documents.

UNITED STATES DEPARTMENT OF AGRICULTURE

**Agricultural Marketing Service
Livestock Division
Washington, D.C.**

Effective November 1976

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Weight Range 1	Weight Range 2	Weight Range 3
600	Spencer Roll, Corned	Under 15	15-22	22-Up
601	Brisket, Boneless, Deckle off, Corned	Under 9	9-12	12-Up
602	Knuckle, Corned	Under 8	8-15	15-Up
603	Knuckle, Dried	Under 5	5-8	8-Up
604	Top (Inside) Round, Corned	Under 16	16-27	27-Up
605	Top (Inside) Round, Dried	Under 10	10-15	15-Up
606	Bottom (Gooseneck) Round, Corned	Under 11	11-18	18-Up
607	Bottom (Gooseneck) Round, Dried	Under 8	8-14	14-Up
609	Rump Butt, Corned	Under 8	8-12	12-Up
613	Tongue, Cured	3-5		
614	Tongue, Smoked	3-5		
617	Process Dried Beef	Under 8	8-14	14-Up
618	Sliced Process Dried Beef			
619	Sliced Dried Beef	¼-pound, ½ pound, 1-pound individual packages, or bulk or layer packed.		
620	Sliced Dried Beef, Ends and pieces			

NOTE: Because it is impractical to list all weight ranges for the above products that purchasers may desire, those included in the index table are suggested only. Other weight ranges may be ordered if desired.

ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER

SELECTION: (Not applicable to dried items).

Selection No. 1

Selection No. 2

STYLE:

A - Drained

B - Pickle

WEIGHT RANGE: (See weight range table).

All weights for cured beef products reflect their drained weight. Draining must be accomplished on a conventional rack or shelf and at the time of weighing the product shall be free of dripping pickle. The USDA grader may weigh only the number of cuts he feels necessary to assure that all cuts comply with the weight range specified.

STATE OF REFRIGERATION:

A - Chilled

B - Frozen

DESCRIPTION OF SELECTIONS

SELECTION NO. 1 CORNED BEEF

Selection No. 1 corned beef cuts shall be at least moderately thick fleshed and moderately plump. The cut surface of the lean muscle shall be at least moderately firm and fine-textured. Also, it shall be a uniform (slight two-toned or iridescent permissible) bright color ranging from light pink to medium red. The fat shall be at least moderately firm and smooth. Cuts with scores which interfere with the making of satisfactory slices are not acceptable.

SELECTION NO. 2 CORNED BEEF

Selection No. 2 corned beef cuts shall be not less than slightly thin-fleshed and slightly flat. The cut surface of the lean muscle shall be at least moderately firm and not more than moderately coarse-textured. Selection No. 2 cuts shall possess the color specified for Selection No. 1 cuts. The fat may be slightly soft or oily. Cuts with scores which interfere with the making of satisfactory slices are not acceptable.

SELECTION NO. 1 TONGUE, CURED OR SMOKED

A selection No. 1 beef tongue shall be at least moderately short in relation to its width, shall be at least moderately thick and plump and shall be firm and resilient. A Selection No. 1 tongue may have 1 cut or score which measures less than 1 inch in any dimension. Tongues with the tip end removed are not acceptable.

SELECTION NO. 2 TONGUE, CURED OR SMOKED

A selection No. 2 beef tongue shall be not less than slightly short in relation to its width, shall be at least slightly thick and plump and shall be firm and resilient. A Selection No. 2 tongue may have 3 cuts or scores which measures less than 1 inch in any dimension. Tongues with a small portion of the tip end removed are acceptable.

FINISHED PRODUCT CHARACTERISTICS

The finished product must be sound and in excellent condition. Cured products must be mildly and thoroughly, but not excessively cured. Smoked tongues must have the characteristic aroma and appearance of a well-smoked product and must be fairly dry on the exterior, but not excessively dried or scorched. All products requiring drying shall be smoked and dried to a fairly uniform dryness and firmness throughout without extreme hardness. Processed dried beef products must be thoroughly cooked and practically free from air holes, pockets of moisture, rendered fat, and gelatinous material. Any encrusted salt, extraneous matter and smokehouse residue must be closely removed by careful light brushing or wiping (no washing), without damage to the product. Stockinettes, strings, and similar hanging devices must be completely removed and excluded.

The average surface fat thickness for all corned beef products and for smoked beef tongues shall not exceed 0.5 inch (maximum 0.8 inch at any one point). All dried beef products must be practically free of surface fat and shall have not more than a slight amount of inter and intra-muscular fat.

In accordance with the regulations of the applicable meat inspection agency, curing, smoking, cooking, and drying of all product items covered by these specifications must be normal to the particular kind of product produced.

DETAILED REQUIREMENTS

Item No. 600 - Spencer Roll, Corned—The spencer roll is the boneless portion of a beef rib remaining after the rib ends have been removed by a straight cut from a point not more than 2 inches from the extreme outer tip of the ribeye muscle on the loin end to a point not more than 1 inch from the extreme outer tip of the ribeye muscle on the chuck end. The backstrap, intercostal meat (rib fingers), and the blade bone and attached cartilage and overlying flesh must be removed and excluded.

Item No. 601 - Brisket, Boneless, Deckle Off, Corned—The boneless brisket has the deckle removed at the natural seam leaving the thick layer of fat attached to the deckle and exposing the lean surface lying directly below. The inside surface must be practically free of fat. The thin tissue edge of the web muscle must be trimmed to expose the lean meat.

NOTE: Item Nos. 602 through 609 shall be cut approximately as described in the specifications for Fresh Beef.

Item No. 602 - Knuckle, Corned—The knuckle shall have the knuckle cover, knee cap (patella), and surrounding heavy connective tissue and the periosteum removed and excluded.

Item No. 603 - Knuckle, Dried—The dried knuckle must be prepared from a Knuckle, Corned—Item No. 602 described herein.

Item No. 604 - Top (Inside) Round, Corned—The top round must have the thick opaque portion on the fragilis membrane removed and excluded.

Item No. 605 - Top (Inside) Round, Dried—The dried top round must be prepared from a Top Round, Corned—Item No. 604 described herein.

Item No. 606 - Bottom (Gooseneck) Round, Corned—The bottom round must have the popliteal lymph gland and the heavy connective tissue on the knuckle edge of the bottom round removed and excluded.

Item No. 607 - Bottom (Gooseneck) Round, Dried—The dried bottom round must be prepared from a Bottom Round, Corned—Item No. 606.

Item No. 609 - Rump Butt, Corned—The rump butt is the dorsal portion of a bottom (gooseneck) round. It must be separated from the ventral portion by a straight cut approximately perpendicular to the skin surface. In addition, it must be free of cartilage and exposed ligaments.

Item No. 613 - Tongue, Cured—The cured beef tongue must be well-trimmed with the tongue root smoothly removed at the base (thick) end, immediately behind the hyoid (U-shaped) bones. Practically all major glandular tissue and all of the trachea (windpipe) must be closely removed and excluded. The hyoid bones and epiglottis (soft palate) may be left on the tongue. Major blood vessels at the base of the tongue, which have been used for pumping, may remain. Also, the cured tongue must be free from discoloration other than natural pigmentation.

Item No. 614 - Tongue, Smoked—The smoked tongue must be prepared from a Tongue, Cured—Item No. 613.

Item No. 617 - Process Dried Beef—Processed dried beef is a coarsely ground, cured, smoked, and fully cooked product which is stuffed in casings or mechanically formed.

Item No. 618 - Sliced Process Dried Beef—Sliced process dried beef must be prepared from Process Dried Beef—Item No. 617. Slices shall be uniform in thickness and must be 24 or more to the inch. Not less than 60 percent or more of the slices shall be fairly intact, and the remainder may be composed only of broken slices. No extremely frayed, shredded, small or scrap pieces, or product residue shall be included.

Item No. 619 - Sliced Dried Beef—Sliced dried beef must be produced from Knuckle, Dried—Item No. 603, Top Round, Dried—Item No. 605, and Bottom Round, Dried—Item No. 607 in approximately equal proportions (by count) as evidenced in the sliced finished product. Slices must be uniform in thickness and must be 40 or more to the inch. Not less than 75 percent of the slices must be intact. Slices from small end sections, extremely frayed or shredded slices, slices showing string or hanger marks, machine scrap pieces, or other product residue must not be included.

Item No. 620 - Sliced Dried Beef Ends and Pieces—Sliced dried beef ends and pieces must be obtained from the regular production of sliced dried beef. The product may consist of frayed, shredded and broken slices, machine scrap sliced pieces, and slices showing string or hanger marks. Other product residue must not be included.

AMENDMENT NO. 1

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR
CURED, DRIED, AND SMOKED BEEF PRODUCTS
APPROVED BY USDA EFFECTIVE NOVEMBER 1976

NOVEMBER 1980

This amendment is being issued to add two new items and modify the ORDERING DATA section.

Page 3, INDEX OF PRODUCTS AND WEIGHT RANGE TABLE, add the following new items:

<u>Item No.</u>	<u>Product</u>	<u>Weight Range 1</u>	<u>Weight Range 2</u>	<u>Weight Range 3</u>
621	Cooked Cured Beef, Chunked and Formed	Under 8	8-14	14-up
622	Sliced Cooked Cured Beef, Chunked and Formed			

Below "ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER", insert:

"CLASS: (Applicable to dried, smoked, and cooked cured items only)

A: Smoked

B: Smoked Flavoring Added (must appear with nomenclature of product)

C: Unsmoked (cooked cured items only)"

SELECTION, after "... applicable to dried ...", insert: "or cooked cured."

After "STYLE:" add: "(Not applicable to cooked cured items.)"

Page 4, FINISHED PRODUCT CHARACTERISTICS, first paragraph, line five, after "Processed dried", insert: "and cooked cured".

Second paragraph, line two, after "All dried ...", insert: "and cooked cured".

Page 6, add the following new items:

"Item No. 621 - Cooked Cured Beef, Chunked and Formed - The product is chunked, cured, cooked beef which is stuffed in casings or formed.

Item No. 622 - Sliced Cooked Cured Beef, Chunked and Formed - Sliced cooked cured beef, chunked and formed must be prepared from Cooked Cured Beef, Chunked and Formed - Item No. 621. Slices shall be uniform in thickness and must be 24 or more to the inch. Not less than 60 percent of the slices shall be fairly intact, and the

remainder may be composed only of broken slices. No extremely frayed, shredded, small or scrap pieces, or product residue shall be included."

This amendment is effective December 9, 1980.

Acting Director, Meat Quality
Division

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR EDIBLE BY-PRODUCTS--SERIES 700

APPROVED BY USDA

These specifications contain descriptions of various edible by-products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs these specifications must be used with "Institutional Meat Purchase Specifications--General Requirements," which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef--Series 100, Fresh Lamb and Mutton--Series 200, Fresh Veal and Calf--Series 300, Fresh Pork--Series 400, Cured, Cured and Smoked, and Fully Cooked Pork Products--Series 500, Cured, Dried, and Smoked Beef Products--Series 600, Sausage Products--Series 800, and Portion-Cut Meat Products--Series 1000. Copies of specifications for these products may be purchased from the Superintendent of Documents.

**UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMER AND MARKETING SERVICE
LIVESTOCK DIVISION
WASHINGTON, D.C.**

EFFECTIVE JANUARY 1971

INDEX OF PRODUCTS AND WEIGHT RANGE TABLE

Item No.	Product	Range 1 Pounds	Range 2 Pounds
701	Beef Liver	Under 13	13-16
702	Beef Liver, Sliced (Frozen)	Under 13	13-16
703	Beef Liver, Portion-Cut (Frozen)	5-to-the-pound	4-to-the-pound
704	Calf Liver	Under 6-1/2	6-1/2 - 8-1/2
705	Calf Liver, Sliced (Frozen)	Under 6-1/2	6-1/2 - 8-1/2
707	Veal Liver	Under 3	3-5
708	Veal Liver, Sliced (Frozen)	Under 3	3-5
710	Pork Liver	Under 5	
713	Lamb Liver	Under 1-1/2	
716	Beef Tongue	3-5	
720	Beef Heart	3-5	

NOTE: Because it is impractical to list all weight ranges for edible by-products that purchasers may desire, those included in this table are suggested only. Other weight ranges may be ordered if desired.

ORDERING DATA: TO BE SPECIFIED BY THE PURCHASER.

Selection: (Not applicable to beef hearts.)

Selection No. 1
Selection No. 2

Style: (Applicable only to sliced beef and calf livers.)

A - Regular
B - Skinned

Weight Range: (See weight range table.)

State of Refrigeration: (Not applicable to sliced or portion-cut liver.)

A - Chilled
B - Frozen

Style of Packaging: (Applicable only to sliced livers.)

A - Reassembled in natural sequence.
B - Layer packed

DESCRIPTION OF SELECTIONS

Selection No. 1 Liver - Selection No. 1 livers shall be compact, thick, short, plump, and shall be practically free from blemishes. However, livers with cuts or scores not exceeding 1 inch in any dimension or livers with small sections removed and excluded are acceptable, provided such defects do not interfere with making satisfactory intact slices. Selection No. 1 livers shall possess a bright, uniform color typical of the species.

Selection No. 2 Liver - Selection No. 2 livers shall be at least moderately compact, thick, short, plump, and shall be practically free from blemishes. However, livers with cuts or scores not exceeding 2 inches in any dimension or livers with up to approximately 1/3 of the liver removed are acceptable, provided such defects do not interfere with making satisfactory intact slices. Selection No. 2 livers shall possess a bright, uniform color typical of the species.

Selection No. 1 Tongue - Selection No. 1 tongues shall be at least moderately short in relation to their width, shall be moderately thick and plump, and shall be firm and resilient. The fat covering at the base of the tongues shall be firm and smooth and must not exceed 1/2 inch at any one point. Selection No. 1 tongues may have 1 cut or score which measures less than 1 inch in any dimension. Tongues with the tip end removed are not acceptable.

Selection No. 2 Tongue - Selection No. 2 tongues shall be not less than slightly short in relation to their width, shall be at least slightly thick and plump, and shall be at least moderately firm and resilient. The fat covering at the base of the tongues shall be moderately firm and smooth and must not exceed 1/2 inch at any one point. Selection No. 2 tongues may have up to 3 cuts or scores which measure less than 1 inch in any dimension. Tongues with a small portion of the tip end removed are acceptable.

MATERIAL

The edible by-products described herein shall show no evidence of freezing or defrosting and must be in excellent condition to the time of delivery.

All livers shall be trimmed free of ragged edges and the gall bladder shall be removed. Whole livers shall have the heavy connective tissue, the large blood vessel, and ducts lying along the liver wall trimmed even with the surface.

Livers to be sliced shall have the heavy connective tissue, the large blood vessel, and ducts lying along the liver wall removed and excluded. Type B beef and calf livers shall have the outer connective tissue (capsula fibrosa) or "skin" removed and excluded except for small pieces remaining on the edges and in the crease of the small (caudate) lobe. Veal livers shall not be skinned. The liver may be molded, frozen, tempered (but not thawed), and/or pressed before slicing. Slices which are broken are not acceptable. Liver slices shall be practically free from liver sawdust. As specified, they may be either (a) reassembled in natural sequence, or (b) layer packed with plastic or parchment or waxed paper separators between layers. After slicing, the liver slices must be promptly packaged and solidly frozen.

Livers to be portion-cut must be prepared as described for livers to be sliced, except that the small (caudate) lobe and the "skin" must be removed and excluded. Portion-cut liver shall be layer packed only.

DETAILED REQUIREMENTS

Item No. 701 - Beef Liver--The color of beef liver may range from light brown, with reddish shades predominating, to dark brown.

Item No 702 - Beef Liver, Sliced (Frozen)--Sliced beef liver must be prepared from Beef Liver - Item No. 701. Liver slices shall be approximately $\frac{3}{8}$ to $\frac{1}{2}$ inch in thickness.

Item No. 703 - Beef Liver, Portion-Cut (Frozen)--Portion-cut liver must be sliced approximately $\frac{5}{16}$ inch thick. Portions shall be at least moderately uniform in weight and, for portion sizes of 4 or less to the pound, the total number of individual portions per 10-pound unit shall vary not more than plus or minus 2 from the number per pound specified multiplied by 10. (For example, if the number per pound specified is 4 to the pound, then $4 \times 10 = 40$ portions. Therefore, with the permitted tolerance of plus or minus 2 from 40, an acceptable 10-pound unit could have from 38 to 42 individual portions.) For portion sizes of 5 or more to the pound, the total number of individual portions per 10-pound unit shall vary not more than plus or minus 3 from the number per pound specified multiplied by 10.

Item No. 704 - Calf Liver--The color of calf liver may range from tan to light brown, with reddish shades predominating.

Item No. 705 - Calf Liver, Sliced (Frozen)--Sliced calf liver must be prepared from Calf Liver - Item No. 704. Liver slices shall be approximately $\frac{3}{8}$ to $\frac{1}{2}$ inch in thickness.

Item No. 707 - Veal Liver--The color of veal liver may range from light reddish tan to tan.

Item No. 708 - Veal Liver, Sliced (Frozen)--Sliced veal liver must be prepared from Veal Liver - Item No. 707. Liver slices shall be approximately $\frac{3}{8}$ to $\frac{1}{2}$ inch in thickness.

Item No. 710 - Pork Liver--The color of pork liver may range from light reddish brown to very dark brown (not bluish or black), with reddish shades predominating.

Item No. 713 - Lamb Liver--The color of lamb liver may range from light medium tan to medium brown, with reddish shades predominating.

Item No. 716 - Beef Tongue--The beef tongue must be well-trimmed with the tongue root smoothly removed at the base (thick) end, immediately behind the base of the hyoid (U-shaped) bones. Practically all glandular tissue and all of the trachea (windpipe) must be removed and excluded. The hyoid bones and the epiglottis (soft palate) may be left on the tongue. Major blood vessels at the base of the tongue may remain. Also, the tongue must be free from discoloration other than natural pigmentation.

Item No. 720 - Beef Heart--A beef heart shall have the "heart-cap" (auricles, arteries, and gristly material) removed and shall be trimmed practically free from fat. Hearts that have been excessively slashed are not acceptable.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Livestock, Meat, Grain, and Seed Division
Washington, D. C. 20250

June 1982

AMENDMENT NO. 1

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR EDIBLE BY-PRODUCTS
APPROVED BY USDA EFFECTIVE JANUARY 1981

This amendment is being issued to modify the MATERIAL section.

Page 3, MATERIAL section, paragraph 3, sentence 2,
delete "Type..." and substitute "Style".

Delete paragraph 4 and substitute:

"Livers to be portion-cut must be prepared and
skinned as described in the preceding paragraph
except the small (caudate) lobe must be excluded
and portion-cut livers shall be layer packed."

This amendment is effective August 2, 1982.

Thomas H. Porter, Director
Livestock, Meat, Grain, and Seed Division

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS

FOR SAUSAGE PRODUCTS

APPROVED BY USDA

These specifications contain descriptions of various sausage products customarily purchased by large-volume users of meat. They were developed in conjunction with interested procurement agencies and suppliers and are approved for use in meat procurement programs in which the meats supplied are examined, accepted, and certified by Federal meat graders. When utilized in such programs these specifications must be used with "Institutional Meat Purchase Specifications General Requirements", which may be purchased from the Superintendent of Documents.

These specifications are one of a series approved for meat and meat products. Others which are available include those for Fresh Beef, Fresh Lamb and Mutton, Fresh Veal and Calf, Fresh Pork, Cured, Cured and Smoked, and Fully-Cooked Pork Products, Cured, Dried, and Smoked Beef Products, and Edible By-Products. Copies of specifications for these products may be purchased from the Superintendent of Documents.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL AND MARKETING SERVICE
LIVESTOCK DIVISION
WASHINGTON, D.C.

Effective July 1976

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Stock No. 001-016-00101-2 / Catalog No. A 88.17/4:SA8/976

INDEX FOR SAUSAGE PRODUCTS

ITEM NO.	PRODUCT	ITEM NO.	PRODUCT
800	Frankfurters	810	Breakfast sausage
801	Bologna	811	Smoked sausage
802	Pork sausage	812	New England brand sausage
803	Liver sausage	813	Polish sausage
804	Cooked salami	814	Meat loaves
805	Minced luncheon meat	815	Meat food product loaves
806	Lebanon bologna	816	Knockwurst
807	Thuringer	817	Breakfast sausage, cooked
808	Dry salami	820	Head cheese
809	Cervelat		

DETAILED REQUIREMENTS

Material—Product items must contain only those kinds of meat specified. As applicable, curing, cooking, smoking (except for loaf items, smoke flavoring or artificial smoke flavoring is permissible in lieu of smoking), and flavoring of product must be normal to the particular kind of product produced. Amounts and kinds of all ingredients must be within the tolerances permitted by the applicable meat inspection regulations.

Item No. 800 - Frankfurters—Frankfurters are a smoked, cooked, linked sausage. They are either skinless, stuffed in sheep casings, or stuffed in collagen casings and are uniform in length and diameter. Links shall be 5 to 6 inches in length. The meat components consist of very finely comminuted beef or beef and pork. The interior cut surface is smooth, fine-textured, light to moderately dark pink in background color, and finely mottled with evenly distributed light to dark red flecks.

End Item Examination - Table II

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Beef and pork (in any combination)
- A1 - Formula A plus nonfat dry milk and/or calcium reduced dried skim milk
- B - Beef, pork (beef is predominant)
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk
- C - Pork, beef (pork is predominant)
- C1 - Formula C plus nonfat dry milk and/or calcium reduced dried skim milk
- D - Beef

Color

- A - Natural (not artificially colored)
- B - Artificially colored (red)

Style

Size

- | | | |
|----------------------|---|------------------------------|
| B3 - Sheep casings |) | |
| C - Skinless |) | 6, 8, 10, 12 links per pound |
| D - Collagen casings |) | |

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 801 - Bologna—Bologna is a smoked, cooked sausage. The meat components consist of beef and pork very finely comminuted and stuffed in artificial or natural casings. The interior cut surface is smooth, fine-textured, light pink in background color, and finely mottled with evenly distributed light to dark red flecks. The 1 to 1.5 pound size shall be ring style.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Beef and pork (in any combination)
- A1 - Formula A plus nonfat dry milk and/or calcium reduced dried skim milk
- B - Beef, pork (beef is predominant)
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk
- C - Pork, beef (pork is predominant)
- C1 - Formula C plus nonfat dry milk and/or calcium reduced dried skim milk

Color

- A - Natural (not artificially colored)
- B - Artificially colored (red)

Style**Size**

A - Artificial casings	1 to 1.5 pounds	(1.3-1.5 inches in diameter)
	4 to 7 pounds	(2.5-3.5 inches in diameter)
	7 to 12 pounds	(3.5-5.0 inches in diameter)
B - Natural casings	1 to 1.5 pounds	(1.3-1.5 inches in diameter)

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 802 - Pork Sausage—Pork sausage is a fresh, all pork product. The meat is chopped or ground to a moderately coarse texture and mixed with salt and spices. Pork sausage may be packed in bulk, formed mechanically, or stuffed in artificial or natural casings. The links, rolls, and bags are moderately uniform in length and diameter. For product in unlinked hog casings no more than one piece shall be less than 12 inches in length in a primary container.

End Item Examination - Table IV**ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER****Style****Size**

A - Artificial casings	1, 2, or 3 pound rolls
B1 - Hog casings, linked	6-8, 8-10 links per pound
B2 - Hog casings, unlinked	
B3 - Sheep casings	10-12, 12-14, 14-16 links per pound
C - Skinless (mechanically formed)	8, 9, 10, 12, 16 links per pound
D - Collagen casings	10-12, 12-14, 14-16 links per pound
E - Cloth bags	2, 3, 5, or 7 pound bags
F - Bulk	5, 6, 8, or 10 pound units

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 803 - Liver Sausage (Braunschweiger)—Liver sausage is a cooked sausage with a smoked characteristic (a smoked characteristic may be imparted by smoking, by adding smoked meats to the formula, or a combination of both). The meat components consist of pork with smoked jowls and/or bacon ends included in some formulas. These are combined with pork livers, finely comminuted and stuffed in artificial or natural casings. Onion shall be included as a seasoning. Sticks measure from 2 to 3 inches in diameter and shall weigh from 5 to 8 pounds. The interior cut surface is fine-textured and light reddish-brown in color.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Pork livers, pork
- A1 - Formula A plus nonfat dry milk and/or calcium reduced dried skim milk
- B - Pork livers, pork with smoked jowls and/or bacon ends and pieces
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk

Style

- A - Artificial casings
- B - Natural casings

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 804 - Salami, Cooked—Cooked salami is a smoked, cooked sausage. The meat components consist of moderately coarse-cut pork and finely comminuted beef with finely comminuted beef heart meat included in some formulas. Seasoning includes garlic and peppercorns. Salami is stuffed in artificial casings and measures from 3.5 to 4.5 inches in diameter. Sticks shall weigh from 7 to 12 pounds. The interior cut surface is moderately coarse in texture and light to dark reddish-brown in color.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Pork and beef
- B - Pork and beef, beef heart meat

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 805 - Minced Luncheon Meat—Minced luncheon meat is a smoked, cooked sausage. The meat components consist of moderately coarse-cut pork and finely comminuted beef with pork heart meat included in some formulas. The product is stuffed in artificial casings. Stuffed round casings shall measure from 3.5 to 4.5 inches in diameter. When the stuffed casings are formed into rectangular shapes by wire or metal molds, they shall measure from 3 to 4 inches in width and depth. Sticks shall weigh from 5 to 10 pounds. The interior cut surface is moderately fine-textured and light pink in color.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Pork, beef (pork is predominant)
- A1 - Formula A plus nonfat dry milk and/or calcium reduced dried skim milk
- B - Pork, beef, pork heart meat
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk

Shape

- A - Rectangular
- B - Rounded

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 806 - Lebanon Bologna—Lebanon bologna is a smoked, uncooked, all beef sausage. The meat component is finely comminuted beef stuffed in artificial casings. Sticks are from 3.5 to 4.5 inches in diameter and shall weigh from 5 to 10 pounds. The product has a characteristically sharp (fermented) flavor. The interior cut surface is fine-textured and exhibits a uniform dark reddish-brown background color with fine fat particles evenly distributed.

End Item Examination - Table I

ORDERING DATA: OPTION DESIRED SHALL BE SPECIFIED BY THE PURCHASER

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 807 - Thuringer—Thuringer is a smoked, uncooked sausage. The meat components are moderately coarse-cut beef or moderately coarse-cut beef with beef heart meat. Thuringer is stuffed in artificial casings and measures from 2.5 to 3.5 inches in diameter. Sticks shall weigh from 4 to 8 pounds. The product has a characteristically sharp (fermented) flavor. The interior cut surface is moderately coarse-textured and a uniform dark reddish-brown color.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Beef
- B - Beef, beef heart meat

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 808 - Dry Salami—Dry salami is a smoked, uncooked, dry sausage. The meat components consist of moderately coarse-cut beef with moderately coarse-cut pork and/or beef

heart meat included in some formulas. The product seasoning includes garlic. Dry salami is stuffed in artificial or natural casings, measures from 2 to 3 inches in diameter, and is processed to produce a firm, hard product. Sticks shall weigh from 2 to 5 pounds. The interior cut surface is firm, moderately coarse-textured, and exhibits a distinctive, uniform distribution of white fat particles. The background color is medium to dark reddish-brown meat.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Beef
- B - Beef, beef heart meat
- C - Beef and pork (in any combination)
- D - Beef and pork, beef heart meat
- E - Beef, pork (beef is predominant)
- F - Beef, pork, beef heart meat
- G - Pork

Style

- A - Artificial casings
- B - Natural casings

State of Refrigeration

- A - Chilled
- B - Frozen
- C - Unrefrigerated

Item No. 809 - Cervelat—Cervelat is a smoked, cooked, dry sausage. The meat components consist of finely comminuted beef and pork stuffed in artificial or natural casings and is processed to produce a firm product. Sticks measure from 1.5 to 2 inches in diameter and shall weigh from 2 to 5 pounds. The interior cut surface is fine-textured and exhibits a uniform medium to dark reddish-brown color.

End Item Examination - Table I

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Beef, pork (beef is predominant)
- B - Pork, beef (pork is predominant)

Style

- A - Artificial casings
- B - Natural casings

State of Refrigeration

- A - Chilled
- B - Frozen

Item 810 - Breakfast Sausage—Breakfast sausage is a fresh product. The meat components consist of predominately pork, with smaller amounts of beef and/or veal. The meat is chopped or ground to a moderately coarse texture. Breakfast sausage may be packed in bulk or stuffed in artificial or hog casings. The links and rolls are moderately uniform in length and diameter. For product in unlinked hog casings no more than one piece shall be less than 12 inches in length in a primary container.

End Item Examination - Table IV

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Style	Size
A - Artificial casings	1, 2, or 3 pound rolls
B1 - Hog casings, linked	6-8, 8-10 links per pound
B2 - Hog casings, unlinked	
F - Bulk	5, 6, 8, or 10 pound units

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 811 - Smoked Sausage—Smoked sausage is a smoked, cooked, linked sausage. The meat components consist of all pork or pork and beef with beef tripe, beef and pork heart meat, and beef and pork tongue meat included in some formulas. The meat is chopped or ground to a moderately coarse texture. Smoked sausages are either skinless or stuffed in hog casings and are moderately uniform in length and diameter. The interior cut surface is moderately coarse in texture (formulas D and D1 may be moderately fine-textured).

End Item Examination - Table II

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Pork
- B - Pork, beef (pork is predominant)
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk
- C - Beef, pork (beef is predominant)
- C1 - Formula C plus nonfat dry milk and/or calcium reduced dried skim milk
- D - Beef and pork, plus any one or any combination of beef tripe, beef heart meat, pork heart meat, beef tongue meat, and pork tongue meat
- D1 - Formula D plus nonfat dry milk and/or calcium reduced dried skim milk

Style	Size
B - Hog casings	6-8, 8-10 links per pound
C - Skinless	6-8, 8-10 links per pound
D - Collagen casings	6-8, 8-10 links per pound

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 812 - New England Brand Sausage—New England brand sausage is a smoked, cooked sausage. The meat components consist predominately of pork chunks with a small amount of finely comminuted beef. The product is stuffed in artificial or natural casings and measures from 3.5 to 4.5 inches in diameter. Individual sausages shall weigh from 5 to 10 pounds. The texture of the interior cut surface is variable, 70-80% of the area consists of pork chunks and the remaining portion is fine-textured.

End Item Examination - Table I

ORDERING DATA: OPTION DESIRED SHALL BE SPECIFIED BY THE PURCHASER

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 813 - Polish Sausage—Polish sausage is a smoked, cooked, linked sausage. The meat components consist of moderately coarse-cut pork or moderately coarse-cut pork with finely comminuted beef. Seasoning includes garlic. The product is stuffed in hog casings or equivalent diameter collagen casings. The links are moderately uniform in length and diameter. The interior cut surface is moderately coarse in texture with a uniform distribution of white particles throughout medium to dark reddish-brown meat.

End Item Examination - Table II

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Pork
- B - Pork, beef (pork is predominant)

Style

- B - Hog casings
- D - Collagen casings

Size

- 3-5, 11-13 inches in length
- 3-5, 11-13 inches in length

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 814 - Meat Loaves—Meat loaves are baked (dry heat) or cooked (moist heat) products. The meat components are finely comminuted beef, pork, and veal. Meat loaves may be rectangular or rounded in shape and shall weigh from 4 to 8 pounds. The exterior surface may be smoked, unsmoked, or browned in hot oil or fat. The interior cut surface is smooth, fine-textured, light pink in background color, and finely mottled with evenly distributed light to dark red flecks. The individual loaves are encased or wrapped in grease and moisture resistant paper or plastic film.

End Item Examination - Table III

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major ingredients only)

- A - Pork, veal (pork is predominant)
- A1 - Formula A plus nonfat dry milk and/or calcium reduced dried skim milk
- B - Pork, beef (pork is predominant)
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk
- C - Pork, beef, veal
- C1 - Formula C plus nonfat dry milk and/or calcium reduced dried skim milk
- D - Pork
- D1 - Formula D plus nonfat dry milk and/or calcium reduced dried skim milk
- E - Veal
- E1 - Formula E plus nonfat dry milk and/or calcium reduced dried skim milk
- F - Beef
- F1 - Formula F plus nonfat dry milk and/or calcium reduced dried skim milk
- G - Ham
- G1 - Formula G plus nonfat dry milk and/or calcium reduced dried skim milk

Class

- A - Smoked
- B - Unsmoked
- C - Browned in hot oil or fat

Shape

- A - Rectangular
- B - Rounded

Type

- A - Baked (dry heat)
- B - Cooked (moist heat)

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 815 - Meat Food Product Loaves—Meat food product loaves are baked (dry heat) or cooked (moist heat) products. Beef, pork and veal may be used singly or in any combination. Other ingredients such as meat by-products, pickles, pimentoes, cheese, nuts, etc., are added as applicable except that lungs, spleens, tripe, udders, blood, skin, cracklings, brains, lips, ears, snouts, kidneys, tongue trimmings, and meat and meat by-products from lamb, yearling mutton, mutton, and goats shall not be used in preparing the loaf. Nonfat dry milk and/or calcium reduced dried skim milk may be added. Individual loaves shall weigh from 4 to 8 pounds. The exterior surface may be smoked, unsmoked, or browned in hot oil or fat. The other ingredients shall be distributed uniformly throughout the entire surface. The individual loaves are encased or wrapped in grease and moisture resistant paper or plastic film.

Meat food product loaves must be specified by name. (For example: pickle loaf, ham and cheese loaf, etc.) Any meat food product loaf not listed below may be ordered. However, if the name is inadequate to appropriately identify the product, the purchaser may be requested to furnish additional information to establish a definite basis for identification.

End Item Examination - Table III

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Formula (major condiment ingredients)

- A. Pimento Loaf
- B. Pickle and Pimento Loaf
- C. Pickle Loaf
- D. Olive Loaf
- E. Pepper Loaf
- F. Cheese Loaf
- G. Macaroni and Cheese Loaf
- H. Liver Loaf

Class

- A - Smoked
- B - Unsmoked
- C - Browned in hot oil or fat

Shape

- A - Rectangular
- B - Rounded

Type

- A - Baked (dry heat)
- B - Cooked (moist heat)

State of Refrigeration

- A - Chilled
- B - Frozen

Item No. 816 - Knockwurst—Knockwurst is a smoked, cooked, linked sausage. Knockwurst may be either skinless or stuffed into hog casings and the links shall be uniform in length and diameter. Links shall be 4 to 5 inches in length. The meat components consist of very finely comminuted beef or beef and pork. The interior cut surface is smooth, fine-textured, and light to moderately dark pink in color.

End Item Examination - Table II.

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER.

Formula (major ingredients only)

- A - Beef
- A1 - Formula A plus nonfat dry milk and/or calcium reduced dried skim milk
- B - Beef and pork
- B1 - Formula B plus nonfat dry milk and/or calcium reduced dried skim milk
- C - Beef, pork (beef is predominant)
- C1 - Formula C plus nonfat dry milk and/or calcium reduced dried skim milk

Color

- A - Natural (not artificially colored)

Style

Size

- | | |
|-----------------|-------------------------|
| B - Hog casings | 6, 7, 8 links per pound |
| C - Skinless | 6, 7, 8 links per pound |

State of Refrigeration

- A - Chilled
B - Frozen

Item No. 817 - Breakfast Sausage, Cooked—Breakfast sausage, cooked, is a linked sausage. The meat components consist of moderately coarse-cut pork and beef. The links shall be skinless and moderately uniform in length and diameter. The interior cut surface is moderately coarse in texture.

End Item Examination - Table II.

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER.

Formula (major ingredients only).

- A - Pork, beef (pork is predominant)
B - Pork and beef

Style

Size

- | | |
|--------------|-----------------------|
| C - Skinless | 19-21 links per pound |
|--------------|-----------------------|

State of Refrigeration

- A - Chilled
B - Frozen

Item No. 820 - Head Cheese—Head cheese is a cooked product. The meat components may consist of all pork head meats or predominately pork head meats with pork, cured pork and/or other pork by-products included, except that ears, livers and spleens are prohibited. The meat is coarse-cut to fine-cut. Onion shall be included as a seasoning. Head cheese may have gelatin added. The finished product is stuffed in artificial or natural casings and shall weigh from 4 to 8 pounds. The interior cut surface is resilient, and very coarse-textured with an even distribution of ingredients.

End Item Examination - Table III

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Style

- A - Artificial casings
B4 - Hog stomachs
B5 - Beef bungs

State of Refrigeration

- A - Chilled
- B - Frozen

EXAMINATION OF END PRODUCT

All examinations prescribed herein shall be performed on the finished product. Lot size, sample size, and the sample unit shall be as shown in Table A. Sampling plans (sample size and acceptance (AC) and rejection (RE) numbers for different lot sizes) shall be as shown in Table B. All classification of defects shall be in accordance with Tables I through IV as specified in the individual item descriptions. The tables are designed to apply to more than one product. Therefore, certain defects listed in Table I through IV do not apply to all products examined according to that Table. For example, Defect No. 104 in Table I would not be applicable when examining bologna since this item description makes reference only to major ingredients which are examined under Defect No. 103. However, Defect No. 104 would be applicable when examining cooked salami which requires that pepper corns and garlic be included.

TABLE A
LOT AND SAMPLE SIZES FOR END PRODUCT EXAMINATIONS

Type of item	Lot size and sample size expressed as ¹	Sample Unit
Linked items	Number of 10-pound units	One link from each sampled 10-pound unit ²
Unlinked sausage in casing	Number of 10-pound units	One approximately 4-inch section from each sampled 10-pound unit
Bag and roll packed sausage	Number of 10-pound units	One bag or roll from each sampled 10-pound unit
Bulk-packaged pork sausage	Number of 10-pound units	Contents of each sampled 10-pound unit
Sticks and loaves	Number of sticks or loaves	One stick or loaf

¹For product packed other than 10 pounds in a primary container the lot size and sample size shall be the number of 10-pound equivalents. This does not apply to sticks or loaves.

²For Frankfurters, Item 800, additional samples must be drawn to determine compliance with defect No. 152, Table II. See External and Internal Product Characteristics Examinations Section.

TABLE B
SAMPLING PLANS FOR EXTERNAL AND INTERNAL PRODUCT EXAMINATION¹

Lot Size	Sample Size ²	Major Defects		Total Defects	
		AC	RE	AC	RE
20 or less	2	0	1	0	1
21-50	5	0	1	1	2
51-100	8	0	1	2	3
101-300	13	0	1	3	4
301-800	32	1	2	7	8
801-15,000	50	2	3	10	11

For larger lot size examinations, contact Standardization Branch, Washington, D.C.

¹Finding of any Severe defect shall cause rejection of the lot.

²If on stick, loaf, bag, and roll items the sample size equals or exceeds the lot size, do 100 percent inspection. For linked items if the sample size equals or exceeds the lot size, sample 2 links and for unlinked items, sample 2 approximately 4-inch sections.

EXTERNAL AND INTERNAL PRODUCT CHARACTERISTICS EXAMINATIONS

All sample units randomly selected for external product examinations also may be used for internal product examinations. On stick and loaf items, bulk-packed pork sausage, and bag and roll packed sausage, internal product characteristics examinations shall be made on the right-hand surface of 1 cross-section of each sample unit. The cut shall have been made by cutting through the sample unit at an approximate right angle to its length. On links or 4-inch section samples the examination shall be made on the right-hand surface of the longitudinally bisected link or section.

For Frankfurters, Item No. 800, an immersion test shall be performed to determine compliance with defects No. 152, 106, and 164 in Table II. For lot sizes of 50 or less this examination shall be performed on three additional selected frankfurters. For larger lots, 5 frankfurters shall be selected. The frankfurters shall be immersed for approximately 10 minutes in 160°F. to 180°F. water.

Sampled sticks, loaves, bags, and rolls from accepted lots may be rewrapped in grease and moisture-resistant paper and included in the delivery lot. Sampled links or 4-inch sections shall not be included in the delivery lot but shall be replaced with other acceptable product.

TABLE I STICK ITEMS

Applies to items; 801, 803, 804, 805, 806, 807, 808, 809, 812

SEVERE	MAJOR	MINOR	DEFECTS
			External Product Characteristics
101			Presence of foreign material. ¹
102			Product which is not in excellent condition (e.g., moldy, stale, slimy, oily, sticky, sour, or discolored). ²
103			Product not of the formula, class, color, style, shape, or state of refrigeration specified by the purchaser.
104			Nonformula ingredients not as specified.
	151		Casing having a rupture or split 1 inch or more in length.
	152		Lacks good resiliency typical of the product. ³
	153		Weight not within range specified.
	154		Diameter not within range specified.
	155		Casing not compactly stuffed with product.
		201	Casing having a rupture or split measuring 0.3 inch or more in length but less than 1 inch.
		202	Casing end extending more than 2.0 inches beyond fastening.
		203	Presence of rendered fat or smokehouse residue or combination of both.
		204	Moisture (water) on casing.
		205	Fat cap at either end deeper than 0.5 inch. ³
		206	Gelatin cap at either end deeper than 0.5 inch. ³
			Internal Product Characteristics
105			Presence of foreign material. ¹
106			Presence of foreign flavor (e.g., musty, moldy, sour, or stale).

107			Presence of a foreign odor (e.g., putrid, stale, sour or rancid).
	156		Lacks good cohesion typical of the product.
	157		Texture not as specified.
	158		Any individual cut surface having more than 1 pocket of fat ⁴ , gelatin, and/or air measuring 0.5 inch or more in length.
	159		One or more pieces of material, other than bone, measuring 0.5 inch or more in any dimension which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
	160		Bone particle measuring 0.3 inch or more in any dimension.
	161		Color not as specified.
	162		Aroma not typical of the product.
	163		Flavor not typical of the product.
		207	Any individual cut surface having more than 3 pockets of fat ⁴ , gelatin, and/or air that individually measures 0.3 inch or more but less than 0.5 inch in length.
		208	One or more pieces of material, other than bone, measuring 0.3 inch or more but less than 0.5 inch in any dimension, which will not break up or disintegrate when subjected to the pressure from the flat side of a knife or spatula.
		209	Bone particle measuring less than 0.3 inch in any dimension.
		NOTE	In addition to the above, the following are also applicable to Dry Salami, Item No. 808.
		210	Fat particles yellow in color.
		211	Fat particles not evenly distributed.
		212	Fat particle measuring 0.4 inch or more in length.

¹Acceptability of product with respect to the presence of foreign material shall be determined by the involved AMS agent except that, for product produced in a plant operating under the Regulations Governing the Meat Inspection of the USDA, this determination shall be made by a USDA Meat Inspection Program employee.

²Slight amount of surface mold permissible on Dry Salami, Item No. 808.

³Not applicable to Dry Salami, Item No. 808, Cervelat, Item No. 809, and Liver Sausage, Item No. 803.

⁴The fat measurement not applicable to Dry Salami, Item No. 808.

TABLE II LINK ITEMS

Applies to items: 800, 811, 813, 816, 817

SEVERE	MAJOR	MINOR	DEFECTS
			External Product Characteristics
101			Presence of foreign material. ¹
102			Product which is not in excellent condition (e.g., moldy, stale, slimy, oily, sticky, sour, or discolored).
103			Product not of the formula, color, style, or state of refrigeration specified by the purchaser.
104			Nonformula ingredients not as specified.
	151		Lacks good resiliency typical of the product. ²
	152		Link is soft, mushy, or abnormally distended or shrunken after immersion in 160°F. to 180°F. water for 10 minutes or more (slight curvature acceptable). ²
	153		Number of links in one pound of product not as specified by the purchaser. ³
	154		Uniformity of length not as specified.
	155		Uniformity of diameter not as specified.
	156		Length not as specified.
		201	Presence of all or part of artificial casing, other than collagen casing.
		202	Link having a split or rupture measuring more than 0.3 inch.
		203	Link which is broken.
		204	Link with fat cap or fat streak.
			Internal Product Characteristics
105			Presence of foreign material. ¹
106			Presence of foreign flavor (e.g., moldy, sour or stale). ⁴

107			Presence of foreign odor (e.g., putrid, stale, sour or rancid).
	157		Lacks good cohesion typical of the product.
	158		Texture not as specified.
	159		Any individual cut surface having more than 1 pocket of fat, gelatin and/or air measuring 0.4 inch or more in any dimension.
	160		One or more pieces of material, other than bone, measuring 0.3 inch or more in any dimension which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
	161		Bone particle measuring 0.3 inch or more in any dimension.
	162		Color not as specified.
	163		Aroma not typical of the product. ⁴
	164		Flavor not typical of the product. ⁴
		205	Any individual cut surface having more than 3 pockets of fat, gelatin, and/or air, that individually measures 0.2 inch or more but less than 0.4 inch in any dimension.
		206	One or more pieces of material, other than bone, measuring less than 0.3 inch in any dimension which will not break up or disintegrate when subjected to pressure from the flat surface of a knife or spatula.
		207	Bone particle measuring less than 0.3 inch in any dimension.

¹Acceptability of product with respect to the presence of foreign material shall be determined by the involved AMS agent except that, for product produced in a plant operating under the Regulations Governing the Meat Inspection of the USDA, this determination shall be made by a USDA Meat Inspection Program employee.

²Applicable only to Frankfurters, Item No. 800.

³Determined once per 10-pound unit drawn for sampling.

⁴For Frankfurters, Item No. 800, this determination shall be made on samples heated to determine compliance with Defect No. 152.

TABLE III LOAF ITEMS

Applies to items: 814, 815, 820

SEVERE	MAJOR	MINOR	DEFECTS
			External Product Characteristics
101			Presence of foreign material. ¹
102			Product which is not in excellent condition (e.g., moldy, stale, slimy, sticky, oily, sour, or discolored).
103			Product not of the formula, class, shape, type, or state of refrigeration specified by the purchaser.
104			Nonformula ingredients not as specified.
	151		Loaf not encased or wrapped.
	152		Unduly distorted loaves affecting their useability.
	153		Blackened and/or blistered surface area measuring 4 square inches or more.
	154		Loaf having a surface break measuring 2 inches or more in length.
	155		Lacks good resiliency typical of the product.
	156		Weight not within range specified.
		201	Blackened and/or blistered surface area measuring 2 square inches or more.
		202	Loaf having a surface break measuring 1 inch or more but less than 2 inches in length.
		203	Presence of rendered fat on surface.
		204	Moisture on surface (including moisture between loaf and casing).
			Internal Product Characteristics
105			Presence of foreign material. ¹
106			Presence of a foreign flavor (e.g., musty, moldy, sour, or stale).
107			Presence of foreign odor (e.g., putrid, stale, sour, or rancid).

	157		Lacks good cohesion typical of the product.
	158		Texture not as specified.
	159		Any individual cut surface having more than 1 pocket of fat, gelatin, and/or air measuring 0.5 inch or more in any dimension. ²
	160		One or more pieces of material, other than bone, measuring 0.3 inch or more in any dimension which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
	161		Bone particle measuring 0.3 inch or more in any dimension.
	162		Color not as specified.
	163		Aroma not typical of the product.
	164		Flavor not typical of the product.
		205	Any individual cut surface having more than 4 pockets of fat, gelatin, and/or air that individually measures 0.3 inch or more but less than 0.5 inch in any dimension. ²
		206	One or more pieces of material, other than bone, measuring 0.1 inch or more but less than 0.3 inch in any dimension which will not break up or disintegrate when subjected to the pressure from the flat side of a knife or spatula.
		207	Bone particle measuring less than 0.3 inch in any dimension.
		208	More than 3 pieces of pickle, pimento, etc., fall out upon cutting for examination. ³
		209	Very uneven distribution of components. ³

¹Acceptability of product with respect to the presence of foreign material shall be determined by the involved AMS agent except that, for product produced in a plant operating under the Regulations Governing the Meat Inspection of the USDA, this determination shall be made by a USDA Meat Inspection Program employee.

²Not applicable to Head Cheese, Item No. 820.

³Scored on Meat Food Product Loaf, Item No. 815 only.

TABLE IV PORK SAUSAGE AND BREAKFAST SAUSAGE

Applies to Items 802, 810

SEVERE	MAJOR	MINOR	DEFECTS
			External Product Characteristics
101			Presence of foreign material. ¹
102			Product which is not in excellent condition (e.g., moldy, stale, slimy, sticky, oily, sour, or discolored).
103			Product not of the style, size ² , or state of refrigeration specified by the purchaser.
104			Nonformula ingredients not as specified.
	151		Difference in length between the longest and the shortest link in the sample is more than 0.5 inch.
	152		Uniformity of diameter not as specified.
	153		Presence of string.
		201	Casing or bag end more than 0.5 inch in length.
		202	Link having a split or rupture measuring 0.3 inch or more.
		203	Length not as specified.
			Internal Product Characteristics
105			Presence of foreign material. ¹
106			Presence of a foreign flavor (e.g., musty, moldy, sour or stale).
107			Presence of foreign odor (e.g., musty, moldy, sour or rancid).
	154		One or more pieces of material, other than bone, measuring 0.5 inch or more in any dimension which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
	155		Bone particle measuring 0.3 inch or more in any dimension.

		204	Two or more pieces of material, other than bone, measuring 0.3 inch or more but less than 0.5 inch which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
		205	Bone particle measuring less than 0.3 inch in any dimension.

¹Acceptability of product with respect to the presence of foreign material shall be determined by the involved AMS agent except that, for product produced in a plant operating under the Regulations Governing the Meat Inspection of the USDA, this determination shall be made by a USDA Meat Inspection Program employee.

²For links determine size once per 10-pound unit drawn for sampling.

AMENDMENT NO. 1

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR SAUSAGE PRODUCTS
APPROVED BY USDA EFFECTIVE JULY 1976

JANUARY 1979

This amendment is being issued to: (1) add new items and (2) make minor changes in the specification.

Page 1 Delete reference to "Agricultural Marketing Service, Livestock Division" and substitute "Food Safety and Quality Service, Meat Quality Division."

Page 2 INDEX FOR SAUSAGE PRODUCTS, add the following new items:

"802A Pork Sausage, Patties
802B Pork Sausage, Patties, Pre-Cooked."

Page 4 Add the following new items:

"Item No. 802A - Pork Sausage, Patties - Pork sausage patties are fresh, all pork product. The meat is chopped or ground to a moderately coarse texture and mixed with salt and spices. The product shall be mechanically formed to yield approximately round patties.

End Item Examination - Table IV

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Size

2.5 or 3 ounce patty

State of Refrigeration

A - Chilled

B - Frozen

Item No. 802B - Pork Sausage, Patties, Pre-cooked - Pork sausage patties, precooked, are composed of pork which is chopped or ground to a moderately coarse texture and mixed with salt and spices. The product shall be mechanically formed to yield approximately round patties after cooking.

End Item Examination - Table IV

ORDERING DATA: OPTIONS DESIRED SHALL BE SPECIFIED BY THE PURCHASER

Size

1.5 or 2 ounce patty

State of Refrigeration

A - Chilled

B - Frozen

Page 13 Table A, add the following row:

"Patties Number of 10-pound units One patty from each sampled
10-pound unit"

Page 14 Table B, footnote 2, second line after "For linked items..." add
"or patties" and after "...2 links..." add "or patties,".

EXTERNAL AND INTERNAL PRODUCT CHARACTERISTICS EXAMINATIONS, after
the last sentence in the first paragraph, add the following:

"Patties shall be examined on both sides for external defects
and shall be completely crumbled for examination of internal
defects. Examination for patty uniformity, items 802A and
802B, shall be made on four randomly selected 10-pound units.
The total number of patties shall be determined. The lot
shall be accepted if the total patty count conforms to the
following schedule.

Patty Weight (ounces)	Patty Count (Total of Four 10-Lb. Units)		
	Acceptable Range	Discount (Percent of Contract Price)	
		1%	2%
1.5	418 - 436	417 or 437	416 or 438
2.0	314 - 326	313 or 327	312 or 328
2.5	252 - 261	251 or 262	250 or 263
3.0	206 - 217	206 or 218	204 or 219

If the total patty count is less than the minimum discount number
or greater than the maximum discount number, the lot shall be
rejected. For patty weights other than those presented, contact
the Standardization Branch, Meat Quality Division, Washington, D.C. 20250

Page 21 Table IV, in table heading after "Items 802..." add "802A,
802B".

In body of table, add the following major defect under
External Product Characteristics:

"154 Evidence of undercooking or overcooking (applies only to
Item 802B).

"155 Incomplete or broken patty (if applicable)."

In body of table, delete severe defect 106 and add the following major defect under Internal Product Characteristics:

"156 Evidence of undercooking or overcooking (applies only to Item 802B)."

Page 16, 18, 20, 22, Tables I, II, III, and IV, footnote 1, second line, delete reference to "AMS" and substitute "FSQS".

This amendment is effective immediately.

Acting Director, Meat Quality Division

AMENDMENT NO. 2

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR SAUSAGE PRODUCTS APPROVED BY USDA EFFECTIVE JULY 1976

MAY 1979

This amendment is being issued to provide a weight tolerance for linked items.

Page 13 EXAMINATION OF END PRODUCT, after the first paragraph, add the following paragraph:

"For items in which portion weight is specified as units per pound, defects for size will be determined with a \pm 5% tolerance for the number of links in a 10-pound sample unit. For example, items specified as 4 per pound must number 38 to 42 items in the 10-pound sample."

Page 17 TABLE II LINK ITEMS, External Product Characteristics, minor defect 202, after the first line, delete the period and add "... (slight lengthwise score made by skinning machine is permissible)....".

Page 21 TABLE IV, PORK SAUSAGE AND BREAKFAST SAUSAGE, delete TABLE IV in its entirety and substitute the following:

TABLE IV PORK SAUSAGE AND BREAKFAST SAUSAGE
Applies to Items 802, 802B, 810

SEVERE	MAJOR	MINOR	DEFECTS (External Product Characteristics)
101			Presence of foreign material. ¹
102			Product which is not in excellent condition (e.g., moldy, stale, sticky, slimy, oily, sour or discolored).
103			Product not of the style or state of refrigeration specified by the purchaser.
104			Nonformula ingredients not as specified.
	151		Difference in length between the longest and the shortest link in the sample is more than 0.5 inch.

TABLE IV PORK SAUSAGE AND BREAKFAST SAUSAGE (CON.)
Applies to Items 802, 802A, 802B, 810

SEVERE	MAJOR	MINOR	DEFECTS (External Product Characteristics)
	152		Uniformity of diameter not as specified.
	153		Presence of string.
	154		Evidence of undercooking or overcooking (applies only to Item 802B). ²
	155		Incomplete or broken party (if applicable)
	156		Weight not within range specified or number of links or patties in 1 pound of product not as specified by ³ the purchaser (as applicable).
		201	Casing or bag end more than 0.5 inch in length.
		202	Link having a split or rupture measuring 0.3 inch or more.
		203	Length not as specified.
SEVERE	MAJOR	MINOR	DEFECTS (Internal Product Characteristic)
105			Presence of foreign material. ¹
106			Presence of foreign odor (e.g., musty, moldy, sour, or rancid).
	157		One or more pieces of material, other than bone, measuring 0.5 inch or more in any dimension which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
	158		Bone particle measuring 0.3 inch or more in any dimension.

TABLE IV PORK SAUSAGE AND BREAKFAST SAUSAGE (CON.)
Applies to Items 802, 802A, 802B, 810

SEVERE	MAJOR	MINOR	DEFECTS (Internal Product Characteristic)
	159		Evidence of undercooking or overcooking (applies only to Item 802B).
		204	Two or more pieces of material, other than bone, measuring 0.3 inch or more but less than 0.5 inch which will not break up or disintegrate when subjected to pressure from the flat side of a knife or spatula.
		205	Bone particle measuring less than 0.3 inch dimension.

- 1/ Acceptability of product with respect to the presence of foreign material shall be determined by the involved FSQS agent except that, for product produced in a plant operating under the Regulations Governing the Meat Inspection of the USDA, this determination shall be made by a USDA Meat Inspection Program employee.
- 2/ The defects noted shall not be scored simultaneously. If both defects are present, only one defect shall be scored.
- 3/ For links determine size once per 10-pound unit drawn for sampling.

This amendment will become effective May 21, 1979.

Jerry Goodall, Acting Director
Meat Quality Division

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Livestock, Meat, Grain, and Seed Division
Washington, D.C. 20250

AMENDMENT NO. 3

TO

INSTITUTIONAL MEAT PURCHASE SPECIFICATIONS FOR SAUSAGE PRODUCTS
APPROVED BY USDA EFFECTIVE JULY 1976

DECEMBER 1981

This amendment is being issued to modify the examination for portion weight.

Page 13 EXAMINATION OF END PRODUCT, after the second paragraph (refer to AMENDMENT NO. 2--May 1979), add the following paragraph:

"For lot sizes greater than 100, 8 of the 10-pound sample units selected under Table B shall be evaluated for portion weights specified as units per pound. If any of the 8 sample units contain less than or more than the specified number (5 percent tolerance), the lot shall be rejected. For lot sizes of 100 or less, the specified number of sample units (Table B) shall be selected and scored for defects 153 and 156 in Tables II and IV, respectively."

This amendment is effective January 11, 1982.

Thomas H. Porter, Director
Livestock, Meat, Grain, and Seed
Division

STANDARDS OF IDENTITY

Following is a list of food products for which there are FDA (Food and Drug Administrative) standards. These are found in Title 21 of the Code of Federal Regulations, Parts 131-169.

MILK AND CREAM

Milk

Concentrated milk
Sweetened condensed milk
Nonfat dry milk
Nonfat dry milk fortified with
vitamins A and D

Lowfat milk
Skim milk
Heavy cream
Light cream
Light whipping cream

Sour cream
Acidified sour cream
Half-and-half
Sour half-and-half
Acidified sour half-and-half
Sour half-and-half dressing
Evaporated milk.

CHEESE AND RELATED CHEESE
PRODUCTS

Asiago fresh and asiago
soft cheese
Asiago medium cheese
Asiago old cheese
Blue cheese
Brick cheese

Brick cheese for manu-
facturing
Caciocavallo siciliano cheese
Cheddar cheese
Cheddar cheese for manu-
facturing
Low sodium cheddar cheese

CHEESE AND RELATED CHEESE
PRODUCTS (Continued)

Colby Cheese
Colby cheese for manufacturing
Low sodium colby cheese
Cold-pack and club cheese
Cold-pack cheese food

Cold-pack cheese food with fruits,
vegetables or meats
Cook cheese, koch kaese
Cottage cheese
Dry curd cottage cheese
Lowfat cottage cheese

Cream cheese
Cream cheese with other foods
Washed curd and cooked curd
cheese
Washed curd cheese for manu-
facturing
Edam cheese

Gammelost cheese
Gorgonzola cheese
Gouda cheese
Granular and stirred curd cheese
Granular cheese for manu-
facturing

Grated cheeses
Grated American cheese food
Hard grating cheeses
Gruyere cheese
Hard cheeses

Limburger cheese
Monterey cheese and monterey
jack cheese
High moisture jack cheese

CHEESES AND RELATED CHEESE
PRODUCTS (Continued)

Mozzarella cheese and scamorza
cheese
Low-moisture mozzarella and
scamorza cheese
Part-skim mozzarella and
scamorza cheese
Low-moisture part-skim mozza-
rella and scamorza cheese
Muenster and munster cheese

Muenster and munster cheese
for manufacturing
Neufchatel cheese
Nuworld cheese
Parmesan and reggiano cheese
Pasteurized blended cheese

Pasteurized blended cheese with
fruits, vegetables or meats
Pasteurized process cheese
Pasteurized process cheese with
fruits, vegetables or meats
Pasteurized process pimento
cheese
Pasteurized process cheese
food

Pasteurized process cheese
food with fruits, vegetables
or meats
Pasteurized cheese spread
Pasteurized cheese spread with
fruits, vegetables or meats
Pasteurized neufchatel cheese
spread with other foods
Pasteurized process cheese
spread

Pasteurized process cheese
spread with fruits, vegetables
or meats
Provolone and pasta filata
cheese
Soft ripened cheeses
Romano cheese
Roquefort, sheep's milk blue-
mold, and blue-mold cheese
from sheep's milk

CHEESES AND RELATED CHEESE
PRODUCTS (Continued)

Samsoc cheese
Sap sago cheese
Semisoft cheeses
Semisoft part-skim cheeses
Skim milk cheese for manu-
facturing

Spiced cheeses
Part-skim spiced cheeses
Spiced, flavored standardized
cheeses.
Swiss and emmentaler cheese
Swiss cheese for manufacturing.

FROZEN DESSERTS

Ice cream and frozen custard
Ice milk
Mellorine: identity; label
statement of optional
ingredients
Sherbet
Water ices.

BAKERY PRODUCTS

Bread, rolls and buns
Enriched bread, rolls and buns
Milk bread, rolls and buns
Raisin bread, rolls and buns
Enriched raisin bread, rolls
and buns
Whole wheat bread, rolls and
buns.

CEREAL FLOURS AND RELATED
PRODUCTS

Flour
Bromated flour
Enriched bromated flour
Enriched flour
Instantized flours

STANDARDS OF IDENTITY

CEREAL FLOURS AND RELATED
PRODUCTS (Continued)

Phosphated flour
Self-rising flour
Enriched self-rising flour
Cracked wheat
Crushed wheat

Whole wheat flour
Bromated whole wheat flour
White cord flour
Yellow corn flour
Durum flour

Whole durum flour
Corn grits
Enriched corn grits
Quick grits
Yellow grits

White corn meal
Bolted whole corn meal
Enriched corn meals
Degerminated white corn meal
Self-rising white corn meal

Yellow corn meal
Degerminated yellow corn meal
Self-rising yellow corn meal
Farina
Bolted yellow corn meal
Enriched farina
Semolina
Enriched rice.

MACARONI AND NOODLE PRODUCTS

Macaroni products
Enriched macaroni products
Enriched macaroni products with
fortified protein
Milk macaroni products
Nonfat milk macaroni products

MACARONI AND NOODLE PRODUCTS
(Continued)

Enriched nonfat milk macaroni
products
Vegetable macaroni products
Enriched vegetable macaroni
products
Whole wheat macaroni products
Wheat and soy macaroni products

Noodle products
Enriched noodle products
Vegetable noodle products
Enriched vegetable noodle
products
Wheat and soy noodle products

CANNED FRUITS

Canned applesauce
Canned apricots
Artificially sweetened canned
apricots
Canned apricots with rum
Canned berries

Canned cherries
Artificially sweetened canned
cherries
Canned cherries with rum
Canned figs
Artificially sweetened canned figs

Canned preserved figs
Canned fruit cocktail
Artificially sweetened canned
fruit cocktail
Canned seedless grapes
Canned grapefruit

Canned peaches
Artificially sweetened canned
peaches

CANNED FRUITS (Continued)

Canned peaches with rum
Canned pears
Artificially sweetened canned
 pears
Canned pears with rum
Canned pineapple

Artificially sweetened
 canned pineapple
Canned plums
Canned prunes.

CANNED FRUIT JUICES

Cranberry juice cocktail
Artificially sweetened cran-
 berry juice cocktail
Canned fruit nectars
Lemonade
Frozen concentrate for
 lemonade

Frozen concentrate for arti-
 ficially sweetened lemonade
Colored lemonade
Frozen concentrate for colored
 lemonade
Limeade
Canned pineapple-grapefruit
 juice drink

Orange juice
Frozen orange juice
Pasteurized orange juice
Canned orange juice
Orange juice from concentrate

Frozen concentrated orange juice
Canned concentrated orange juice
Orange juice for manufacturing
Orange juice with preservative
Concentrated orange juice
 for manufacturing

CANNED FRUIT JUICES (Continued)

Concentrated orange juice with
 preservative
Canned pineapple juice
Canned prune juice.

FRUIT BUTTERS, JELLIES, PRESERVES
AND RELATED PRODUCTS

Fruit butter
Fruit jelly
Artificially sweetened fruit
 jelly
Fruit preserves and jams
Artificially sweetened fruit
 preserves and jams

FRUIT PIES

Frozen cherry pie.

CANNED VEGETABLES

Canned green beans and canned
 wax beans
Canned corn
Canned field corn
Canned peas
Canned dry peas

Canned tomatoes
Tomato paste
Tomato puree
Catsup
Certain other canned vegetables
Canned mushrooms.

VEGETABLE JUICES

Tomato juice
Yellow tomato juice.

FOOD FACTS

FOOD & DRUG ADMINISTRATION

STANDARDS OF IDENTITY

FROZEN VEGETABLES

Frozen peas.

EGGS AND EGG PRODUCTS

Eggs

Dried eggs

Frozen eggs

Liquid eggs

Egg whites

Dried egg whites

Frozen egg whites

Egg yolks

Dried egg yolks

Frozen egg yolks.

FISH AND SHELLFISH

Oysters

Extra large oysters

Large oysters

Medium oysters

Small oysters

Very small oysters

Olympia oysters

Large Pacific oysters

Medium Pacific oysters

Small Pacific oysters

Extra small Pacific oysters

Canned oysters

Canned Pacific salmon

Canned wet packed shrimp and

canned dry pack shrimp in

nontransparent containers

Frozen raw breaded shrimp

Frozen raw lightly breaded

shrimp

Canned tuna.

CACAO PRODUCTS

Cacao nibs

Chocolate liquor

Breakfast cocoa

Cocoa

Low-fat cocoa.

Cocoa with dioctyl sodium sulfo-
succinate for manufacturing

Sweet chocolate

Milk chocolate

Buttermilk chocolate

Skim milk chocolate

Mixed dairy product chocolates

Sweet cocoa and vegetable fat

(other than cacao fat) coating

Sweet chocolate and vegetable fat

(other than cacao fat) coating

Milk chocolate and vegetable fat

(other than cacao fat) coating.

TREE NUT AND PEANUT PRODUCTS

Mixed nuts

Shelled nuts in rigid or semirigid
containers

Peanut butter.

NONALCOHOLIC BEVERAGES

Soda water.

MARGARINE

Margarine.

SWEETENERS AND TABLE SIRUPS

Dextrose anhydrous
Dextrose monohydrate
Glucose sirup
Dried glucose sirup
Lactose

Cane sirup
Maple sirup
Sorghum sirup
Table sirup.

FOOD DRESSINGS AND FLAVORINGS

French dressing
Mayonnaise
Salad dressing
Vanilla extract
Concentrated vanilla extract

Vanilla flavoring
Concentrated vanilla flavoring
Vanilla powder
Vanilla-vanillin extract
Vanilla-vanillin flavoring
Vanilla-vanillin powder.

FOOD FACTS

DEPARTMENT OF DEFENSE

PRODUCT LIST

Following is a list of food products purchased by the Department of Defense. "Brand Contracts."

<u>Item No.</u>	<u>Item Group</u>
8905-5301	PROCESSED FISH, MEAT, POULTRY & SEAFOOD PRODUCTS
8910-5101	PROCESSED DAIRY & EGG PRODUCTS
8915-5501	CANNED FRUITS & VEGETABLES, GRADED
8915-0102	JUICES, FRUIT & VEGETABLE
8915-5303	CANNED FRUITS & VEGETABLES - UNGRADED
8915-5104	FRUITS & VEGETABLES, DEHYDRATED
8915-5405	FRUIT DRINK BASES
8920-0301	CEREAL
8920-0504	NOODLES & PASTA
8920-1103	COOKIES & CRACKERS
8925-0201	TABLE SYRUP & MOLASSES
8925-0802	SUGARS
8930-0601	JAMS, JELLIES & PRESERVES
8935-5601	SOUPS, SOUP BASES & BOUILLON
8940-5101	PUREED VEGETABLES, FRUITS & MEATS
8940-5202	FOODS, PORTION PACK
8940-5103	FOODS, DIETETIC
8940-5104	GELATINS, PUDDINGS, PIE & CAKE FILLINGS
8945-0101	EDIBLE OILS & FATS
8950-5101	CONDIMENTS & RELATED PRODUCTS
8955-0501	COFFEE & TEA
8975-0501	TOBACCO SUPPLIES
8999-5502	FOODS, DRY

PRODUCT LIST

A

Ala King Mix	8910-5101
Allspice	8950-5101
Almond Extract	8950-5101
Anti-Stick Coating	8945-0101
Apple Juice, Grade A	8915-0102
Apple Base, Conc.	8915-0305
Apple Pie Filling Mix	8940-5104
Apple Rings, Spiced	8915-5303
Apple Sauce, Nuggets, Dehydrated	8915-5104
Apple, Dehydrated Pie Pieces	8915-5104
Apples, Grades A & C	8915-5501
Applesauce, Dietetic, Grade A	8940-5103
Applesauce, Pureed	8940-5101
Apricots, Halves, Grade B	8915-5501
Apricots, Solid Pack, Grade C	8915-5501
Apricots, Dietetic, Grade B	8940-5103
Apricots, Pureed	8940-5101
Apricots, Slices, Dehydrated	8915-5104
Asparagus, Cut, Grade A	8915-5501
Asparagus, Pureed	8940-5101

B

Bananas, Mashed	8940-5101
Beans, White in New England Style Sauce, Grade A	8915-5501
Beans, Small White Dried	8915-5104
Beans, White in Tomato Sauce, Grade A	8915-5501
Beans, White in Tomato Sauce, Vegetarian, Grade A	8915-5501
Bean Sprouts	8915-5303
Beans, Green, Pureed	8940-5101
Beans, Red Kidney, Dried	8915-5104
Beans, Lima, Dried	8915-5104
Beans, Green Lima, Grade B	8915-5501
Beans, Pea, Dried	8915-5104
Beans, Pinto	8915-5104
Beans, Wax, Cut, Grade B	8915-5501
Beans, Waxed, Cut, Dietetic, Grade B	8940-5103
Beef, Creamed Thin Sliced	8905-5301
Beef Hash	8905-5301
Beef Sliced in Bar-B-Q Sauce	8905-5301
Beef Stew	8905-5301
Beef, Pureed	8940-5101
Beef, w/Vegetables Pureed	8940-5101
Beef Tea	8935-5601
Beets, Diced, Grades A & C	8915-5501
Beets, Sliced, Grades A & C	8915-5501
Beets, Sliced, Dietetic, Grade A	8940-5103
Beets, Pureed	8940-5101
Blackberries, Whole	8915-5501
Blueberries, Whole	8915-5501

PRODUCT LIST

Biscuits	8999-5501
Bran Muffins	8999-5502
Brownies	8999-5502

C

Cake Icing	8999-5502
Cake Mix	8999-5502
Carrots, Diced, Grade A	8915-5501
Carrots, Pureed	8940-5101
Carrots, Sliced, Grade A	8915-5501
Catsup, Tomato	8950-5101
Catsup, Tomato, Indiv. Portion	8940-5202
Celery Seed, Ground	8950-5101
Celery Seed, Whole	8950-5101
Cereal, General Foods Corp.	8920-0301
General Mills, Inc.	
Kellogg Sales Co.	
Quaker Oats Co.	
Ralston Purina Co.	
Standard Milling Co.	
Cheese, Parmesan, Grated	8910-5101
Cheese Sauce	8910-5101
Cheesecake Filling Mix	8910-5101
Cherries, Dark Sweet, Dietetic, Grade B	8940-5103
Cherries, Maraschino, Whole	8915-5303
Cherries, Maraschino, Halves	8915-5303
Cherries, Red Tart, Grade C	8915-5501
Cherries, Royal Anne, Dietetic, Grade A	8940-5103
Cherries, Whole Dark Sweet, Grade B	8915-5501
Cherries, Whole Light Sweet, Grade B	8915-5501
Chicken, Pureed	8940-5101
Chicken, w/Vegetables, Pureed	8940-5101
Chicken Tea	8935-5601
Chili Con Carne, w/Beans	8905-5301
Chili Con Carne, without Beans	8905-5301
Chili, Ground	8905-5101
Chili Mix	8905-5301
Chili Sauce	8905-5101
Chop Suey Vegetables	8915-5303
Chow Mein, Meatless	8915-5303
Cinnamon, Ground	8905-5101
Cloves, Ground	8950-5101
Cocoa, Indiv. Portion	8940-5202
Cocoa, Low Fat	8999-5502
Coconut-Pineapple Fruit Drink, Conc.	8915-5305
Coffee, Bean	8955-0501
Coffee, Ground	8955-0501
Coffee, Instant, Decaffeinated	8999-5502
Coffee, Instant, Decaffeinated, Indiv. Portion	8999-5502
Coffee, Instant, Regular	8999-5502
Coffee, Instant, Regular, Indiv. Portion	8940-5202
Collards, Grade A	8915-5501

FOOD FACTS

DEPARTMENT OF DEFENSE

PRODUCT LIST

Cookies, Bulk	8920-1103
Cookies, Individual	8920-1103
Corn, Cream Style, Grade B	8915-5501
Corn, Whole Grain, Grade B	8915-5501
Corn, Dehydrated	8915-5303
Corn, Pureed	8940-5101
Corn Muffin Mix	8999-5502
Corn Starch	8999-5502
Corned Beef	8905-5301
Corned Beef Hash	8905-5301
Crackers, Cheese	8920-1103
Crackers, Graham	8920-1103
Crackers, Oyster	8920-1103
Crackers, Saltine	8920-1103
Crackers, Snack	8920-1103
Cranberry Juice	8915-0305
Cranberry Sauce, Grade A, Whole & Strained	8915-5501
Cranberry Sauce, Individ. Portion	8940-5202
Cream, Dry, Non-Dairy, Individ. Portion	8940-5202

D

Dates, Pieces, Dehydrated	8915-5104
Dessert, Gelatin	8940-5104
Dessert, Gelatin Portion Pack	8940-5202
Dessert, Vega-gel	8940-5104
Dinner Roll Mix	8999-5502
Doughnut Mix	8999-5502
Dressing, All-Purpose, Dietetic	8940-5103
Dressing, French	8950-5101
Dressing, French, Dietetic	8940-5103
Dressing, French, Individual Portions	8940-5202
Dressing, Italian	8950-5101
Dressing, Salad	8905-5101
Dressing, Salad, Individual Portions	8940-5202
Dressing, Thousand Island	8950-5101
Dressing, Thousand Island, Individual Portions	8940-5202
Dressing, Dry Mix, French, Italian, Russian, Blue Cheese	8950-5101

E

Egg Custard Mix	8910-5101
Eggnog Mix, Instant	8910-5101

F

Fruit Bases, for Dispenser	8915-5405
Fruit Cocktail, Grade B	8915-5501
Fruit Cocktail, Dietetic, Grade A	8940-5103

FOOD FACTS

DEPARTMENT OF DEFENSE

PRODUCT LIST

Fruit Cocktail Mix, Dehydrated	8915-5104
Fruit for Salad, Dietetic, Grade B	8940-5103
Fruit, Mixed Salad, Grade B	8915-5501
Fruit, Mixed, Dehydrated	8915-5104

G

Garlic Salt	8950-5101
Gelatin Dessert Mix, Dietetic	8940-5103
Gelatin, Unflavored	8940-5104
Ginger, Ground	8950-5101
Grapefruit, Grade B	8915-5501
Grapefruit, Juice, Grade A	8915-0102
Grapefruit, Drink Conc.	8915-0305
Grapefruit Segments, Dietetic, Grade A	8940-5103
Grape Juice, Concord, Grade A	8915-0102
Grape Juice, Blended, Grade A	8915-0102
Gravy Mix, Brown, Dehydrated	8999-5502
Grape, Concord, Base	8915-0305

H

Ham, Pureed	8940-5101
Ham, w/Vegetables, Pureed	8940-5101
Honey, Individual Portion	8940-5202
Horseradish	8950-5101

I

Italian Sausage Seasoning & Extender	8905-5301
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J

Jellies	8930-0601
Jellies, Individual Portion	8940-5202

K

Kale, Grade A	8915-5501
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L

Lamb, Pureed	8940-5101
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FOOD FACTS

DEPARTMENT OF DEFENSE

PRODUCT LIST

Lasagna	8920-0504
Lasagna, Fortified	8920-0504
Lemon Extract	8950-5101
Liver, Beef, Pureed	8940-5101

M

Macaroni & Cheese	8910-5101
Macaroni, Elbow	8920-0504
Macaroni, Elbow, Protein-Fortified	8920-0504
Marmalade, Orange	8930-0601
Marmalade, Orange, Individual Portion	8940-5202
Mayonnaise	8950-5101
Mayonnaise, Individual Portion	8940-5202
Meat Enricher, High Protein	8905-5301
Meat Loaf Mix	8905-5301
Milk, Evaporated	8910-5101
Milk, Powdered	8910-5101
Milkshake Mix	8910-5101
Molasses	8925-5201
Mushrooms, Stems & Pieces	8915-5303
Mustard Greens	8915-5501
Mustard, Ground	8950-5101
Mustard, Prepared, Dark	8950-5101
Mustard, Prepared, Light	8950-5101
Mustard, Individual Portion	8940-5202

N

Noodles, Chow Mein	8915-5303
Noodles, Egg Bows	8920-0504
Noodles, Fine-Medium-Wide	8920-0504
Nutmeg, Ground	8950-5101

O

Oil, Corn	8945-0101
Oil, Salad Vegetable	8945-0101
Olives, Manzanilla, Stuffed	8950-5101
Olives, Plain Queen	8950-5101
Olives, Stuffed Queen	8950-5101
Olives, Whole and Broken	8950-5101
Onions, Dehydrated	8915-5104
Orange & Grapefruit Drink, Conc.	8915-0305
Orange & Grapefruit Juice, Grade A	8915-0102
Orange Juice, Grade A	8915-0102
Orange Drink, Conc.	8915-0305
Oranges, Mandarin	8915-5303
Oregano, Ground	8950-5101

PRODUCT LIST

P

Pancake Mix	8999-5502
Paprika, Ground	8905-5101
Peaches, Halves, Dietetic, Grade B	8940-5103
Peaches, Pie Pack, Grade C	8915-5501
Peaches, Clingstone, Sliced, Grade B	8915-5501
Peaches, Dietetic, Sliced, Grade B	8940-5103
Peaches, Slices, Dehydrated	8915-5104
Peaches, Yellow Cling Halves, Grade B	8915-5501
Peaches, Yellow Freestone Halves, Grade B	8915-5501
Peaches, Yellow Freestone Slices, Grade B	8915-5501
Peaches, Pureed	8940-5101
Peanut Butter	8930-0601
Pears, Dietetic, Grade B	8940-5103
Pears, Pureed	8940-5101
Pears, Halves & Slices, Grade B	8915-5501
Peas, Grade B	8915-5501
Peas, Sweet Dietetic, Grade B	8940-5103
Peas, Pureed	8940-5101
Peas, Blackeye	8915-5104
Pepper, Black Ground	8950-5101
Pepper, Black, Individual Portion	8940-5101
Peppers, Sweet Bell, Dehydrated	8915-5104
Pickles, Sliced Sweet	8950-5101
Pickles, Whole Dill	8950-5101
Pickles, Whole Sweet	8950-5101
Pie Crust Mix	8999-5502
Pie Fillings	8940-5104
Pimentoes, U. S. Grade A	8915-5501
Pineapple, Chunks, Grade B	8915-5501
Pineapple, Crushed, Grade B	8915-5501
Pineapple, Dietetic, Grade A	8940-5103
Pineapple Juice, Grade A	8915-0102
Pineapple Drink Conc.	8915-0305
Pineapple, Medium Sliced, Grade B	8915-5501
Pineapple Tidbits	8915-5501
Plums, Pureed	8940-5101
Plums, Purple, Grade B	8915-5501
Plums, Purple, Dietetic, Grade B	8940-5103
Pork, Pureed	8940-5101
Potatoes, Au gratin	8910-5104
Potatoes, Hash Browns	8910-5104
Potatoes, Scalloped	8910-5104
Potatoes, Diced, Dehydrated	8915-5104
Potatoes, Instant Flakes	8915-5104
Potatoes, Instant Mash Brown	8915-5104
Potatoes, Sliced, Dehydrated	8915-5104
Potatoes, Sweet, Instant	8915-5104
Potatoes, Sweet, Whole in Syrup	8915-5501
Preserves	8930-0601
Preserves, Individual Portion	8940-5202
Prune Juice, Conc.	8915-0102
Prune Juice, Single Strength	8915-0102
Prunes, Whole Pitted, Dehydrated	8915-5104

PRODUCT LIST

Pudding, Instant	8940-5104
Pudding, Prepared	8940-5104
Pudding, Ready-to-serve	8940-5104
Pumpkin, Strained, Grade A	8915-5501
Pudding, Dietetic	8940-5103

Q

R

Raisins	8915-5104
Ravioli	8905-5301
Relish, Sweet	8950-5101
Relish, Sweet, Individual Portion	8940-5202
Rice	8999-5502
Rigatoni	8920-0504

S

Sage, Dry Ground	8950-5101
Salad, 3-Bean	8915-5303
Salad, 4-Bean	8915-5303
Salad, Vegetable, Sweet 'n Sour	8915-5303
Salmon, Pink	8905-5301
Salt, Individual Portion	8904-5202
Salt	8950-5101
Sandwich, Filling, Chicken Salad	8905-5301
Sandwich, Filling, Tuna Salad; Ham Salad	8905-5301
Sauerkraut, Shredded, Grade A	8915-5501
Sausage Seasoning & Extender	8905-5301
Sea Shells	8999-5502
Seasoning & Extender for Tuna & Salmon	8905-5301
Shortening, Compound	8945-0101
Shortening, Compound, Deep Fry	8945-0101
Shortening, Vegetable Oil	8945-0101
Shrimp, Broken	8905-5301
Sloppy Joe Mix	8905-5301
Soup Bases, Conc.	8935-5601
Soups, Canned	8935-5601
Soups, Dehydrated	8935-5601
Soups, Dehydrated, Single Serving	8935-5601
Soy Sauce	8950-5501
Souffle Mix	8910-5101
Spaghetti Sauce Mix, Dry	8999-5502
Spaghetti Sauce	8915-5303
Spaghetti, Regular, Thin	8920-0504
Spinach, Pureed	8940-5101
Spinach, Whole Leaves, Grade A	8915-5501
Spaghetti, Thin, Protein Fortified	8920-0504

PRODUCT LIST

Squash, Pureed	8940-5101
Sugar Packets	8940-5202
Sugar, Granulated	8925-0802
Sugar, Light Brown	8925-0802
Sugar, Powdered	8925-0802
Sugar Substitute, Individual Portion	8940-5202
Sweet Roll Mix	8999-5502
Syrup, Imitation Maple	8925-0201
Syrup, Sugar & Maple	8925-0201
Syrup, Blended Corn & Refiners	8925-0201
Syrup, Table, Individual Portion	8940-5202
Sweet'n Sour Sauce	8915-5303

T

Taco Filling Mix	8905-5301
Tartar Sauce	8950-5101
Tartar Sauce, Individual Portion	8940-5202
Tea	8955-0501
Tea, Iced Mix w/Sugar & Lemon	8999-5502
Textured Vegetable Protein	8905-5301
Thyme, Ground	8950-5101
Tomato Juice, Grade A	8915-0102
Tomato Juice, Salt Free, Grade A	8940-5103
Tomato Pasta, Light Conc.	8915-5501
Tomato Pureed, Heavy, Grade A	8915-5501
Tomato Pureed, Medium, Grade A	8915-5501
Tomato Sauce	8915-5303
Tomatoes, Red, Whole & Lg. Pcs., Grade B	8915-5501
Tomatoes, Red, Whole & Lg. Pcs., Grade C	8915-5501
Tomatoes, Red, Whole, Dietetic, Grade B	8940-5103
Tomatoes, Whole Crushed	8915-5303
Tuna, Light Meat	8905-5301
Turnip Greens, Grade A	8915-5501
Turkey, Pureed	8940-5101

V

Veal, Pureed	8940-5101
Vanilla Extract, Pure	8950-5101
Vegetables, Mixed	8915-5303
Vegetables, Stew	8915-5303
Vinegar, Cider	8950-5101

W

Waffle Mix	8999-5502
Whipped Topping Mix	8999-5502
Worcestershire Sauce	8950-5101

Equipment of Interest to
Food Service Personnel

7240-5301	Waste & Refuse Containers
7330-0601	Food Service Utensils/Cutlery
7340-0402	Flatware, Single Service
7340-0501	Flatware, Stainless Steel
7350-5601	Tableware, Plastic
7365-5701	Kitchen Storage & Service Supplies
3610-0302	Office Copying Machines, Lease Only
4210-0201	Fire Extinguishers
6240-0601	Incandescent & Fluorescent Lamps
7105-0504	Folding Tables & Trucks
7105-0601	Folding Chairs
7430-0601	Electric Typewriters
7920-5201	Janitorial Supplies
8105-0301	Dietary Paper Products

GROUP XIII - STORAGE AND CARE
OF FOOD PRODUCTS

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Although a food service operator exercises rigid purchasing disciplines, food quality can degenerate between receiving and serving. There are many opportunities betwixt and between these two points where quality can go astray and often does. Since the manners in which qualities can be retained vary from one product to another, the specifics of quality care are covered in more detail in the various sections of this text.

It is our purpose, therefore, to summarize in this particular section, some of the steps which might be taken to safeguard or even improve the quality of foods at the time they are received, while they are stored, and during preparation and service. Since quality retention is also related to contamination and spoilage, these subjects are also treated herein.

RECEIVING

At the time of receiving food products, it is essential to verify the quantity (count or weight) of the merchandise received as well as visible quality factors. Frozen and perishable items should be checked for temperature on arrival. Each item should be examined thoroughly to make sure that it is within the quality range, size, etc., expected. Any consistent variations should be brought to the attention of the supplier. The person responsible for quality control should keep a permanent log of all discrepancies or changes in product qualities.

STORING

Virtually all food service establishments have at least three facilities for storing foods and other supplies. These consist of a pantry (a dry storage area), a freezer and a cooler (refrigerator). One of the common causes of quality problems is the lack of proper or adequate facilities. The amount of space available should be sufficient to accommodate at least a two or three week supply which normally allows space for a sufficient back-up of alternative items. Although many operators have adequate space, they suffer from a lack of discipline in ordering and selecting stock as well as insufficient shelving for keeping the products well organized and readily accessible.

Pantry space should be well racked and organized so that stock rotation can be easily practiced and products easily identified. It is important to ventilate this room so as to maintain a temperature of not less than 40°F during the winter and not more than 70°F during the summer. As shown in the following section, the quality of canned and dried foods are maintained much longer at 70°F than 90°F. Hot storage rooms should be avoided.

Many food service establishments have insufficient freezer space. This condition either restricts the amount of frozen food they can use or inhibits the orderly arrangement of inventory and good stock rotation. Although a walk-in freezer is preferred in most larger establishments, reach-in, up-right units can be used efficiently if the space is adequate. A small reach-in freezer is often desirable in addition to a walk-in unit for keeping small packages and for holding products which are in process. A temperature of 0°F is satisfactory for most freezers. If the temperature goes up to 5°F when the freezer is used frequently during the day,

do not be alarmed, provided the food is not held for more than three or four weeks before it is used.

For very best results, large installations should have three walk-in coolers. One can be designated as a dairy cooler for holding packaged merchandise at about 32°F and for quick chilling products which should be served cold. To best maintain the quality of milk and most other dairy products, premixed vegetable salads and many other products, a cooler of this temperature is most dependable.

It is also helpful to have a second "dry" cooler which will hold a temperature of 38° to 45°F for products which store best at this temperature range. Such a cooler would be equipped with a thermostat so that the temperature could be set as required. Whereas, a temperature of 38°F might be preferred for most products, 45°F would be preferred if fresh eggs were stored in quantity.

For maximum quality protection, an establishment should also be equipped with a "wet" cooler which can be set at 38°F, although for some items the temperature can be as high as 50°F. This cooler should have a relative humidity of 90 to 95 percent. To hold a high relative humidity, it may be necessary to install a humidifier.

If an establishment can justify only one cooler, it should have a temperature range from 32°F to 45°F, according to the thermostat setting. The relative humidity should be about 85 percent at 32°F, and 95 percent at 45°F. This range is attainable if the proper equipment is selected. Such refrigeration equipment just have automatic defrost and a temperature differential between air temp (coils) of about 15°F.

The temperature in all food storage areas including the pantry, should be monitored at all times by a dependable thermometer, preferably the remote dial type. With this type of thermometer, the bulb, which is the sensitizer, is inside the room and the dial outside by the door where it can be easily read. Coolers should also be equipped with accurate relative humidity gauges.

Because master cartons can be a source of contamination, the contents (cases, boxes and packages) should be removed at the time the product is stored. Sometimes, however, this is not practical as in the case of frozen french fries and other vegetables because the product is packed in bags which stack poorly. Also, useful information such as style of pack is sometimes listed on the master container and not on individual packages.

All food held in any walk-in area should be tightly packaged at all times. In as far as practical, prepared foods held in a reach-in refrigerator should also be packaged or covered to prevent transfer of flavors and odors and to minimize dehydration.

Although stock rotation should be practiced with all items, it is particularly important to rotate the perishable stock. If frozen and grocery items are to be used within a few weeks, it may make but little difference if the stock is not strictly rotated, especially since stock is not delivered in strict rotation according to dates of pack. It is inadvisable however, to allow a product to get "lost" to the extent that it stays on the bottom of the stack for several months.

PREPARATION AND SERVING

The quality of output foods can be either increased or decreased over input foods, depending on the skills of the cook and the care used in preparation. It is not unusual for a skilled chef to convert foods of moderate quality into dishes with high levels of acceptance. By the same token, top quality foods can be downgraded by over-cooking, under-cooking or the improper use of sauces or seasonings. Well prepared foods can be degraded by serving them at the wrong temperatures. Hot foods must be served quite hot (180°F or over) and cold foods should be well chilled.

FOOD FACTS

XIII - PREVENTING FOOD POISONING
AND FOOD INFECTION

The following text is quoted directly from The University of Georgia, Bulletin 901, "Preventing Food Poisoning and Food Infection", April, 1984, Cooperative Extension Service, and prepared by Estes Reynolds, George Schuler, William Hurst and James A. Christian, Extension Food Scientists.

BACTERIA, FOOD POISONING

Food safety concerns every food handling facility. Each year thousands of individuals suffer the discomfort and pain resulting from food-borne illness. To prevent such illnesses, understanding the bacteria that cause food poisoning is essential.

The term "food poisoning" is generally used to describe illness caused by all types of food-borne microorganisms. Food poisoning and food infection are different, although the symptoms are similar. True food poisoning or food intoxication is caused by eating food that contains a toxin or poison due to bacterial growth in food. The bacteria which produced and excreted the toxic waste products into the food may be killed, but the toxin they produced causes the illness or digestive upset to occur. Staphylococcus aureus and Clostridium botulinum are two species of bacteria that cause food poisoning.

Food infection is the second type of food-borne illness. It is caused by eating food that contains certain types of live bacteria which have grown in the food. Once the food is consumed, the bacterial cells themselves continue to grow and illness can result. Salmonellosis is a good example of food-borne infection. Vibrio parahaemolyticus is another infection organism and is found primarily in shellfish from polluted waters.

Clostridium perfringens grows in warm foodstuffs like beef stews or gravies and produces toxins. It also causes a food infection by continuing to grow after it is eaten.

FOOD POISONING MICROORGANISMS

Staphylococcus aureus

Staphylococcus is a true food poisoning organism. The coccus, or round-shaped, organism appears in grape-like clusters when viewed under a microscope. It produces a heat stable toxin when allowed to grow for several hours in foods such as chicken pot pie or cream filling. This bacterial growth may not cause any off color, odor, or textural or flavor change, but the toxin will be secreted into the food.

Staphylococcus toxin is not markedly affected by heating or freezing as it is heat stable. Even if the food is heated before eating, the poison in the food will cause illness although the heat has killed the bacterial cells.

The major sources of staph contamination are people and domestic animals. It is commonly found in the nasal passages and on the skin of most people. Staphylococcus bacteria can be found in cuts, scratches, boils and pimples on the skin. These bacteria get into the food from cuts and sores on workers' hands or from sneezes during food preparation. This organism grows best at body temperature (98°F), but it can grow over the much wider range of 50° to 115°F. It prefers food with a pH above 4.5, so it is seldom found in acid food such as tomatoes, pickles and citrus juices.

Symptoms of Staphylococcus Food Poisoning - The symptoms produced by the staph toxin occur very rapidly, four to six hours after eating. These include headache, nausea, vomiting, stomach cramps, diarrhea and a general washed out feeling. Many people suffer from staph food poisoning and never report it or don't realize they have it. Although a large number of cases occur yearly, only a fraction of them are identified as being caused by staph bacteria.

Prevention - The best prevention of staph food poisoning is to properly store food and reduce the temperature below 40°F within four hours after preparation or serving. In order for staph to grow and produce toxin, it must have sufficient time. Approximately two to four hours, depending upon conditions, are required at a suitable growth temperature for toxin production. Therefore, it is important to cool or heat foods through the danger zone of 40°F to 140° as rapidly as possible.

A second way to prevent contamination by staph organisms is by keeping cuts or sores covered and avoiding hand contact with cooked food. Workers' hands are major sources of contamination. Good personal hygiene and good hand washing habits are essential in preventing contamination.

Clostridium botulinum

The other type of true food poisoning is botulism. This organism has received much publicity and rightly so. It does not just cause illness, it is fatal in 60 percent of the cases. It is found in the soil, in water, in sewage and in the intestines of humans and animals. This organism does not require oxygen to grow and thus is referred to as an anaerobe. Clostridium botulinum is a rod-shaped organism that forms a heat resistant spore. You can kill the vegetative cells by heating or cooking, but the spores require 240°F, or pressure canning, to kill them. These spores are much like seed. When they are placed in a dry place or under adverse conditions, they will not germinate. They can withstand long periods of dry

conditions and can withstand boiling water for several hours. Once these spores are placed in a food with the proper temperature, moisture, and low acid conditions, they will germinate and grow. Once the bacterial cells are produced, they can then grow and have the capability of producing toxin. It is for this reason the open kettle method of canning is not suitable for low acid foods.

One can easily understand how Clostridium botulinum, a soil and water organism, could gain entrance into a foodstuff. Take green beans for example. Beans grow in the garden near the ground and often have particles of soil attached to them when they are brought in for processing. Inadvertently, minute particles of soil containing the Clostridium organisms may adhere to the beans. Since this organism is anaerobic, food in which it will grow must be free of oxygen. If food is canned properly, at the specified time and temperature, the process adequately kills all vegetative cells as well as spores of Clostridium botulinum.

The key to the growth of Clostridium botulinum and product of its toxin is the pH of the canned food. All fruits, vegetables and meats carry this microorganism, but because of their acid nature (pH below 4.5) fruits will not permit its growth. Meats and most vegetables are not acid foods and will support its growth. They have a pH above 4.5.

This microorganism does not necessarily produce adverse affects in the food during growth. For example, the toxin can be present and there will be no swelling, off-color, or off-odor. Any time you open a processed vegetable or meat, cook it before you eat it.

In order for the toxin to develop, the temperature during canning must be inadequate to kill the spores. This organism produces at least seven known toxins. Types A, B and E are most commonly associated with human illness. Toxins are produced best at temperatures between 85°F and 95°F but have been shown to be produced from 38°F to 118°F.

Symptoms of Botulism - In a large number of cases, death is the final result of a botulism outbreak. Specific symptoms may include fatigue, dizziness, headache, vomiting, diarrhea, nausea, acute indigestion followed by constipation, double vision, and difficulty swallowing or speaking. Throat constriction and muscle paralysis come in the final stages, followed by death due to suffocation.

Prevention - The major source of the problem is home canned foods which have not been properly processed. About 20 cases of botulism occur each year in the United States because of improperly home canned foods. Remember, always check home pressure cookers to make sure all dials and systems are functional before using a source such as the "Ball Blue Book", or your local Extension office.

It is interesting to note that only three outbreaks of botulism from commercially canned foods have occurred since 1925, resulting in four deaths; one in 1941, two in 1963 and one in 1971. This is a remarkable record for the commercial canning industry when you consider that over 17 million cans of foods are sold each year in the country. The saying is you stand 100 times greater chance of being struck by lightning than of getting botulism from commercially canned foods.

FOOD INFECTION MICROORGANISMS

Salmonellae

Over 1,200 species of Salmonella exist. All are potentially dangerous to people. Salmonella live in the intestinal tracts of humans and animals and are continually passed from person to animal, animal to person, and person to person in a continuous cycle. The prime sources of Salmonella contaminants of our food supply come from the intestines of animals. Vermin such as rodents, roaches and flies also carry Salmonella.

Salmonellosis has occurred from the consumption of contaminated foods such as cheese, milk, eggs, meat, poultry, pastries, cakes and candies.

Salmonellosis is caused when we eat foods which contain the organism. This is a food infection. These organisms continue to grow and multiply in the small intestines. The result is sickness eight to 24 hours after we eat the contaminated food.

Salmonellosis is the most widespread of all food-borne illnesses. More than 20,000 cases are reported to the Center for Disease Control annually. This is probably only a small percent of the cases that actually occur each year..

Symptoms of Salmonellosis - Salmonellosis is characterized by an abrupt onset of diarrhea, nausea, abdominal pain, prostration, chills, fever and vomiting. These symptoms vary in intensity from slight to severe. The symptoms rarely cause death except to infants or the elderly who may rapidly dehydrate.

Prevention - Salmonellosis can easily be prevented. Cooking kills this organism. Sickness most often occurs due to contamination of the food after cooking. Salmonella can easily be controlled by good sanitation practices to prevent cross contamination. Cook food should never be prepared on cutting boards or equipment that has been used to prepare raw products.

Since food infection type bacteria are killed by cooking, foods such as meat, poultry and eggs should be adequately cooked to prevent possible ingestion of the organism.

Prompt refrigeration of cooked foods or leftovers is the first line of defense against this food infection organism. Never store food in containers which will not allow rapid cooling of the food product. Use shallow pans not more than three inches deep. If large quantities must be chilled, use commercial heat exchangers to chill product or agitate the foodstuff in an ice water bath until the product is chilled below the danger zone of rapid bacterial growth (40°F).

Clostridium perfringens

Clostridium perfringens food poisoning has often been tagged as a problem of the food service industry since most outbreaks are associated with mass feeding operations such as cafeterias or banquets. Each year, a large number of outbreaks of food poisoning from Clostridium perfringens occur in home kitchens and fast food establishments, especially those serving gravy, meat stews or broths.

Clostridium perfringens, a soil and water organism, is like C. botulinum in that it is a spore former, it is not killed by boiling, and it is an anaerobe. This means that it grows best when there is no air or free oxygen present in its environment. This organism also has strict requirements for growth, thus it is normally associated with meats, gravies or meat dishes. This organism is somewhat different from other food poisoning bacteria because it produces a toxin and also causes a food infection by continuing to grow in the digestive system after it is consumed.

C. perfringens can grow over a wide range of temperatures, but grows very slowly at low temperatures. Unlike most other food poisoning bacteria, these bacterial spores will germinate and grow best at temperatures between 100°F and 117°F. Unfortunately, this is a temperature range found quite frequently in warm food holding areas in food service facilities, such as steam tables and oven type warmers.

The major reasons C. perfringens is associated with food service or mass feedings are that it requires an environment free from air, storage time, high temperatures and a strict nutrient supply.. These conditions are usually met when meat stews, sauces, gravies and soups are improperly stored. The food is usually cooked in a large, deep container. After cooking, one assumes (incorrectly) that no bacteria are present, and the large container is placed in the cooler. Because of the container's size and depth, rapid cooling is impossible. The spores germinate and grow to large numbers. When the product is ready to be used, it is heated in the same container. Because of the container's size, reheating is difficult and the bacteria are not killed. When the food is eaten, a large number of people are usually affected.

Symptoms - The symptoms for this food poisoning are relatively mild in most cases and may be called a "stomach virus" and go unreported. If the outbreak occurs at a large gathering, however, such as a banquet or church function, it is usually reported and documented.

Symptoms of the illness include abdominal cramps, diarrhea, occasional nausea, and sometimes fever or vomiting. The symptoms usually appear four to 22 hours after eating and may persist for one to five days.

Prevention - Many foods such as meat and poultry may carry the organism, but the mere presence of C. perfringens in food is not enough to cause illness. Millions of growing cells are needed. The prevention of growth of this organism is best accomplished by following the standard food service practices of rapidly chilling prepared foods in shallow containers and keeping cold food cold and hot food hot. Remember, always reduce the level of contamination by keeping all work areas clean and sanitary.

Vibrio parahaemolyticus

Vibrio parahaemolyticus is a particular food infection organism not familiar to many people; it nevertheless is an important problem. This organism is mostly associated with shellfish or other fish coming from contaminated or polluted marine waters.

Vibrio parahaemolyticus is a comma-shaped organism which grows at lower temperatures, 50°F, as well as higher temperatures. It is also a halophilic organism and is able to grow well in salt water.

Symptoms - As other food infection organism, large numbers are required to cause illness. Abdominal cramps, nausea and vomiting may result.

Prevention - The major prevention of this food-borne illness stems from the banning of contaminated waters to fishermen. However, the best assurance for a food service establishment to prevent Vibrio food poisoning is to keep shellfish properly refrigerated to prevent growth. Always be sure the shellfish are thoroughly cooked. Since many fish, such as oysters, are eaten raw, the restaurant should buy from reputable sources coming from known waters.

TRICHINELLA SPIRALIS

No food poisoning and food infection report would be complete unless we cover the basics for controlling the ancient Trichinella spiralis. Trichinosis is an exceedingly painful disease and is among the most dreaded human illnesses. This microscopic parasite resides in the muscle of infected pork or in other animals which eat flesh. Although it is not a bacterial food infections, it is an important food-borne illness.

Symptoms - During the period when the worm burrow into the intestinal walls and lay eggs, human symptoms are nausea, vomiting and diarrhea. When the larvae encyst in the muscle, the symptoms are extreme muscular pain, edemas, enlarged lymph nodes and persistent fever.

The most critical phase of illness comes when the larvae grow and begin to coil. Edema, toxemia and dehydration occur. Death may follow. The disease lasts from two to eight weeks.

Prevention - Cooking the food breaks the cycle. Prevention is easy. Cook all pork well done to a temperature of 165°F. For microwave cooking of fresh pork, rotate the cut often during cooking. Cook to a uniform doneness of 170°F internal temperature. Remove cut from oven, wrap in foil, and hold for 15 minutes prior to serving to allow the heat to equalize throughout the cut.

SUMMARY

To prevent food-borne illness, follow these suggestions.

1. Limit the introduction of microorganism into the food by washing and sanitizing your hands before handling food; wash all raw foods, clean and sanitize all food equipment, utensils and contact surfaces.
2. Destroy the microorganisms that may have contaminated the food by properly cooking the foods, reheating food rapidly to above 140°F, and holding all hot foods above 140°F.
3. Limit the growth of microorganisms by promptly refrigerating leftovers, rapidly chilling hot foods by using shallow containers, and checking your refrigeration to ensure proper temperature control.
4. When in doubt, throw it out.

References

Anonymous, 1970. Botulism in the United States Review of CaPes. 1899-1969, U.S. Department of Health, Education, and Welfare.

Anonymous, 1977. Salmonella Surveillance. Annual Summary CDC, U.S. Department of Health, Education, and Welfare.

Anonymous, 1981. Morbidity and Mortality weekly reports. U.S. Department of Health and Human Services. Vol. 30:115, 121, 171.

Bryan, Frank L., 1972. Emerging Food-borne Diseases I. Their surveillance and epidemiology. T. Milk Technology 35:618.

Bryan, Frank L., 1972. Emerging Food-borne Diseases II. Factors that contribute to outbreaks and their control.

Zottola, Edmund A., 1967. Salmonellosis. Extension Bulletin #339. University of Minnesota.

Zottola, Edmund A., 1971. Clostridium perfringens food poisoning. Extension Bulletin #365. University of Minnesota.

End of the text quoted from The University of Georgia, Bulletin 901, "Preventing Food Poisoning and Food Infection", April, 1984, Cooperative Extension Service, and prepared by Estes Reynolds, George Schuler, William Hurst and James A. Christian, Extension Food Scientists.

Bacteria DOUBLE



every half-hour — at 90°F.

every hour — at 70°

every 2 hours — at 60°

every 3 hours — at 50°

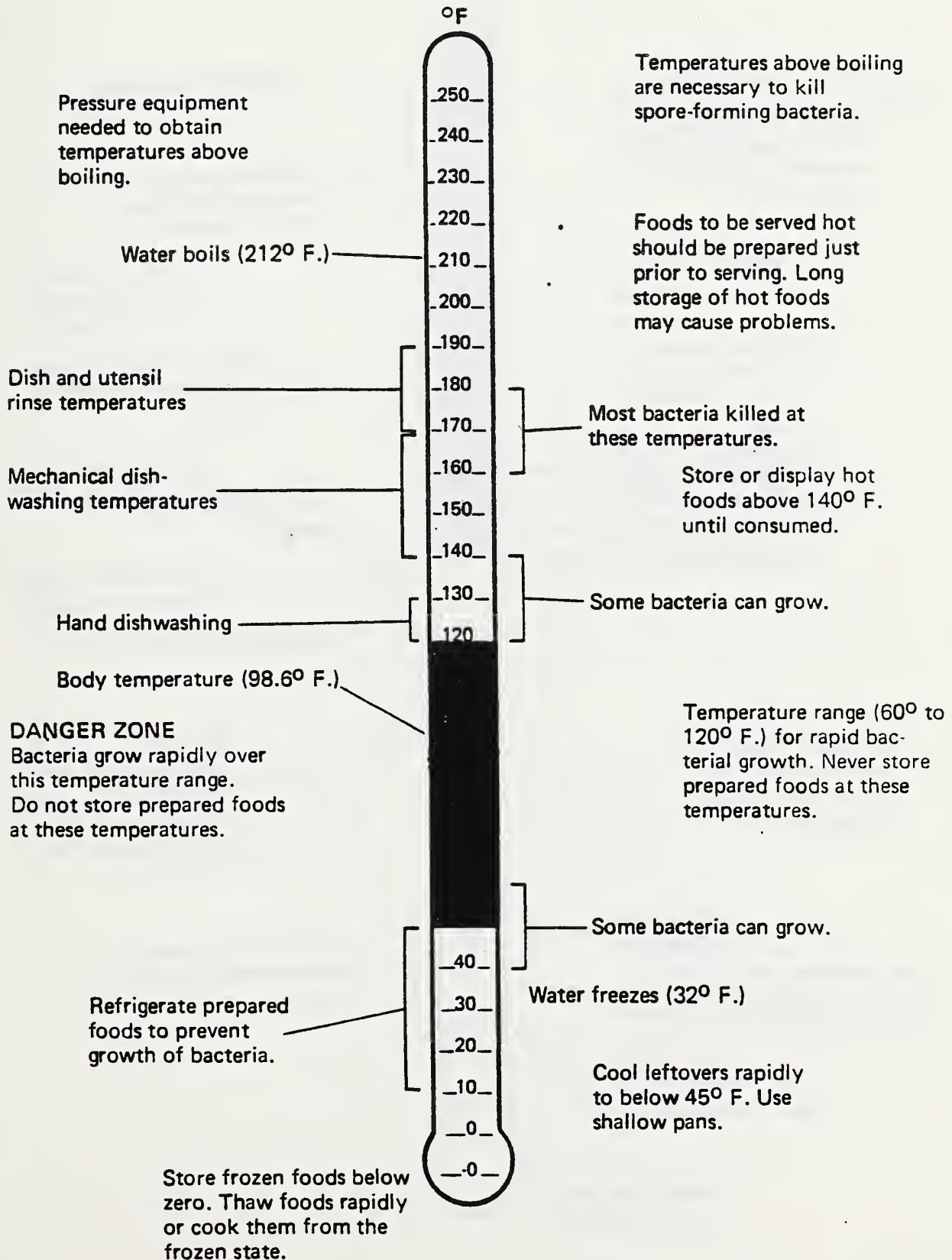
every 6 hours — at 40°

every 20 hours — at 32°

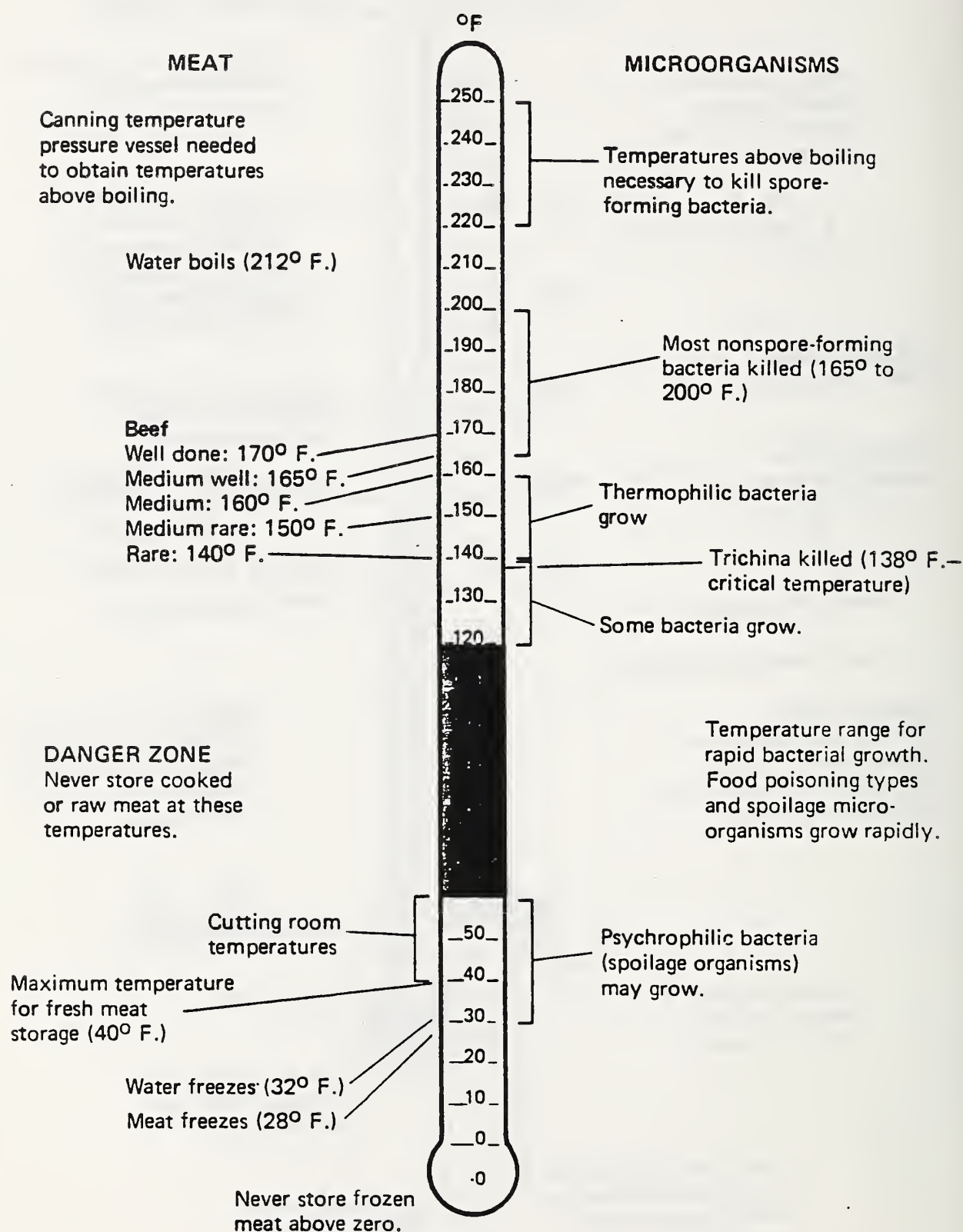
Life
BEGINS
at
40°



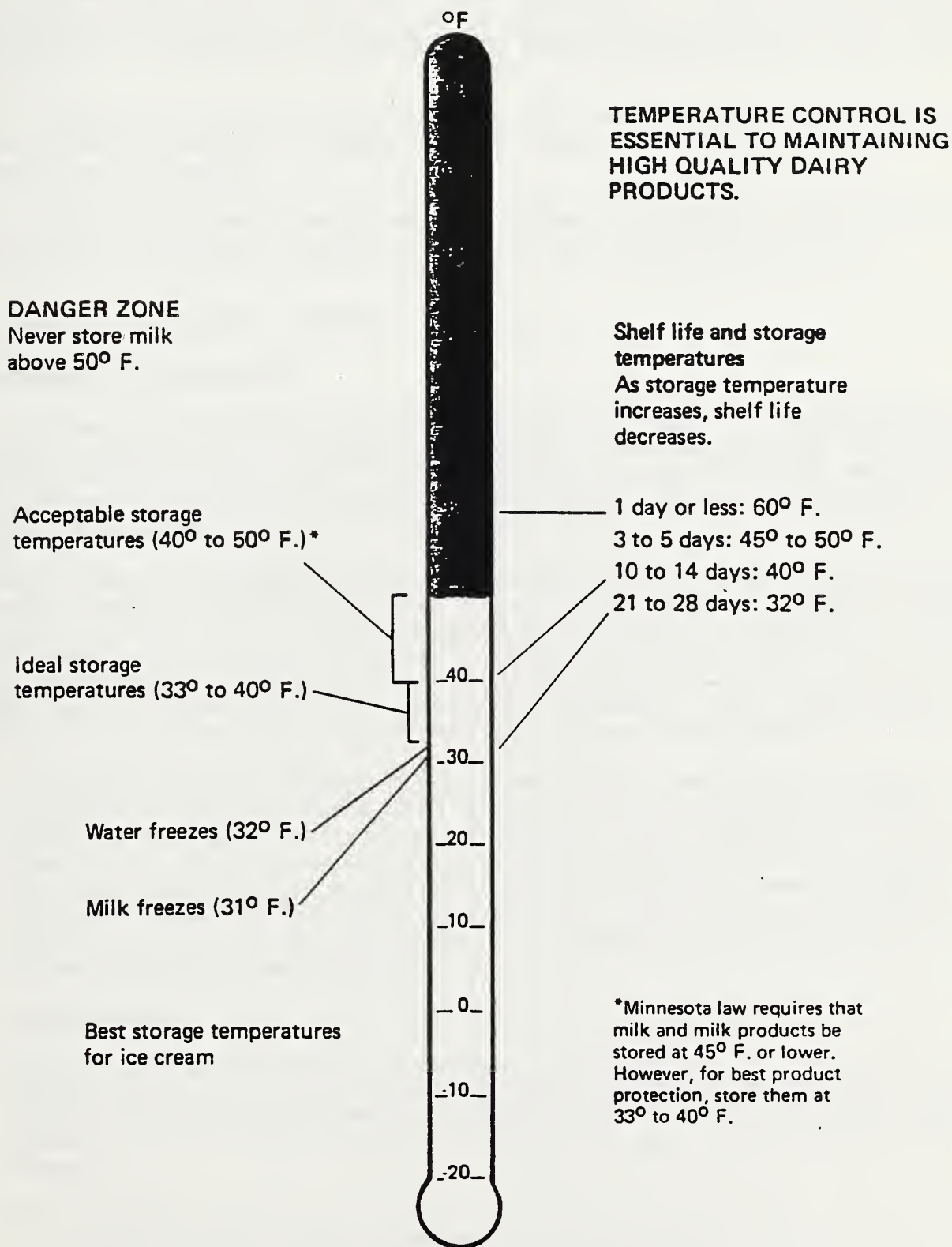
Temperature Guide for Safe Handling of Food in a Food Service Enterprise



Temperature Guide for Safe Storage and Use of Meat



Temperature Guide for Safe Handling of Milk



The following warehouse guidelines on storage are based in part on the Department of Defense Manual DOD 4145.19-R-1 dated September 15, 1979. The information contained in the DOD Manual is based on information supplied by the U.S. Department of Agriculture, the Refrigeration Research Foundation and other reliable sources.

The information contained in DOD 4145 has been modified to be more relative to the commercial section in general and the school food service and institutional subsections in particular.

The information presented herein pertains principally to warehouse storage, although many points are salient to backroom storage at food service establishments.

CHILLED AND FROZEN STORAGE - GENERAL

Prevention of Deterioration

All chilled and frozen foods are highly perishable and subject to rapid deterioration when improperly stored. Storage at temperatures which are too high or too low, under unfavorable conditions of humidity, improperly packaged, and in the absence of proper air circulation in unsanitary storerooms will result in rapid spoilage and eventual loss of the product.

Most spoilage of chilled and frozen items is caused by micro-organisms, particularly certain species of bacteria and fungi; the contamination spreads rapidly from the decayed items to the surrounding sound food products. Therefore, frequent inspection while in storage, followed by sorting and removal of the decayed items or portions thereof, is of basic importance in maintaining the products in top condition and in keeping losses and surveys to a minimum. The storage guidelines presented herein are based on strict adherence to these requirements.

All shipments should be segregated and marked in such a manner as will assure that the oldest lots are distributed first, except when it may become necessary to distribute a lot quickly to avoid loss by spoilage or when another lot of the same commodity is in a better condition for continued storage. Old lots of chilled or frozen foods should not be allowed to accumulate in storage rooms, but should be distributed promptly or surveyed if unfit for use. Frozen products which arrive in a partially thawed condition, should not be accepted, nor should such products be refrozen after having been defrosted.

Air Circulation

Along with proper temperature and humidity, air circulation in a storage room is an important factor in the proper storage of chilled and frozen stored foods. This is facilitated by stacking all products on pallets in such a manner, that will provide a minimum of 4" of wall clearance, 2' ceiling clearance and sufficient working aiseways.

-
1. A space of 12" or more is preferred for rodent control.

Fresh Fruits and Vegetables

Containers should be raised off the floor by the use of pallets and individual lots should be stacked so as to permit free circulation of air. The use of a fan or duct system may be desirable in some cases to maintain proper circulation in all parts of a room.

The introduction of outside air into cold storage rooms housing fruits and vegetables is not necessary. However, when fresh fruits and vegetables are stored in tight compartments at temperatures of 40°F or higher, the concentration of carbon dioxide produced by respiration may reach such a danger point that a match or candle will be extinguished. While this condition is not considered harmful to most products, personnel should not work in such rooms until a supply of fresh air has been introduced.

Frozen Fruits and Vegetables

Frozen fruits and vegetables are highly perishable unless properly stored. Correct handling and proper storage of such foods are imperative in utilizing frozen foods to the best advantage. Upon delivery, frozen fruits and vegetables should be transferred promptly to a low temperature storage space. Temperature of the load should be checked upon arrival by taking temperature readings of cartons selected from top layers inside of shipping cases.

If the temperature of the product is higher than freezer room temperature, shipping cases should be scattered loosely about the room on handtrucks or pallets with adequate space between individual cases to permit rapid lowering of the product temperature (overnight) to freezer room temperature. The use of a portable fan to create an air current over the products will hasten temperature equalization. When the temperature of the product has been lowered sufficiently, cases should be stacked compactly. If the product temperature upon delivery is the same as or below temperature of freezer room, the cases should be stacked compactly immediately.

Frozen Meat, Meat Products and Poultry

A prime factor in keeping the temperature in all parts of meat storage spaced at the recommended levels is proper circulation of the refrigerated air. Meat items will not be stored on the bare floor; pallets should be placed on the floor to allow free circulation of air under all items stored in the space. Generally, when the recommended temperature in all parts of the refrigerated space is uniform and is maintained around the stacks in the freezer space, the circulation of air may be considered to be adequate.

Fresh Dairy Products and Eggs

To keep the air in a cold storage room fresh, the room must be kept clean and the air must circulate slowly. Ordinarily, adequate air circulation can be provided by the use of pallets on the floor, and by proper stacking of the various lots. Egg cases should not be stacked more than five high to avoid pressure damage.

FROZEN STORAGE - SPECIFIC

The storage guidelines shown in Table 1 are based on:

- Proper treatment of the product prior to arrival
- Proper packaging, and,
- Proper (ideal) storage conditions prior to and after arrival.

TO MAINTAIN PRODUCTS AT TOP LEVELS OF QUALITY AND FOR REASONS OF ECONOMY AS WELL, FROZEN ITEMS HELD IN A TERMINAL DISTRIBUTOR WAREHOUSE SHOULD BE USED WITHIN THREE MONTHS OF RECEIPT UNLESS INDICATED OTHERWISE IN TABLE 1.

The approximate storage times shown in Table 1 for frozen products are based on the maximum times allowed before the quality of the products will degenerate significantly. It is important to remember that the frozen storage of all products is based on Time Temperature Tolerance.

It can be expected that if the acceptability of a product scores 100 after 3 months, the score might be only 90 after 6 months and so on. Under these circumstances, a product might score a 50 on the same relative scale after 18 months and still have a moderate degree of patron acceptance. It is important to remember also, that items which contain spices might age faster than plain items.

Keys to Storage Life

- Inspect temperatures on arrival.
- Make sure that the integrity of the packaging is not violated.
- Employ proper storage conditions.
- Keep a continuous record (recording) of room temperatures to make sure that the frozen temperature is not violated.

Many products, particularly meats, cheese, etc., will suffer from freezer burns (dehydration) if not properly packaged and if temperatures are violated.

If a frozen product is to be held for months in a terminal distribution warehouse, it should be inspected at least at 3-month intervals to make sure that the quality is at the level expected for the storage period.

TABLE 1 - GUIDELINES FOR STORING FROZEN FOODS AT 0°F OR BELOW

	Approximate Storage Life Months
Apples	18
Apple Juice, Concentrated	30
Asparagus	12
Bacon ^{2,3}	
cooked	9
slab,	5½
sliced,	1½
sliced, vacuum packed	3
Canadian	6
Beans	
green	12
lima	14
wax	12
Beef ²	
boneless, fabricated	12
carcass, wholesale cuts	12
corned	6
cutlets, boneless (restructured)	9
dried, sliced	12
ground	9
ground patties	6
liver, whole or portion cut	4
tongue, fresh	4
tongue, cured or smoked	6
Blackberries	18
Blueberries	18
Bologna ^{2,3}	
Lebanon	8
50% beef	3-4
60% beef	3-4
75% beef	6
Boysenberries, dewberries, loganberries, youngberries	18
Bread dough	6
Bread Yeast raised (and rolls fresh)	6
Broccoli	14
Brussels Sprouts	12
Burritos	6
Butter prints and patties	18
Cakes, coffee, layer, loaf, cheese	12
Carrots	24
Cauliflower	14

TABLE 1 - GUIDELINES FOR STORING FROZEN FOODS AT 0°F OR BELOW

	Approximate Storage Life Months
Cervelat ^{2,3}	
dry	6
soft (thuringer)	3-4
Cherries, RTP and dark, sweet, pitted	24
Cheese, pizza blend, shredded	12
Chicken ²	
gizzards	6
parts, cut up, ready to cook	8
whole, ready to cook	10
Clams, shucked ²	8
Corn	24
Corn on the cob	9
Crabs	8
Cranberry juice cocktail	24
Dates	12
Ducks ²	10
Egg rolls	6
Eggs	
whole (including table grade) ²	12
whites	12
yolks, sugar or salt added ²	12
Enchiladas	6
Fish - fillets and steaks ²	
fatty (mackerel, salmon)	3
moderately fatty (halibut, perch, rockfish)	6
lean (cod, haddock, flounder)	4-5
Frankfurters - 50% pork ^{2,3}	
carton	$\frac{1}{2}$
flexible package	1
Grape juice, concentrated	24
Grapefruit juice, concentrated	24
Grapefruit-orange juice, concentrated	24
Grapefruit sections	12
Greens, leafy	14
Hams, boneless, cooked ²	6
Ice Cream, sherbets or ices	9
Ice cream, novelties	3
Lamb ²	
boneless, fabricated	12
carcass, wholesale cuts	12
cutlets, boneless (restructured)	9
slices, chops	9

TABLE 1 - GUIDELINES FOR STORING FROZEN FOODS AT 0°F OR BELOW

	Approximate Storage Life Months
Lard	12
Lemon juice, concentrated	18
Lemonade, concentrated	18
Lime juice, concentrated	18
Lime juice, single strength	18
Luncheon loaf ^{2,3}	3-4
Manicotti	6
Margarine, prints and patties ²	12
Meal, precooked (TV dinners, pot pies, etc.) ^{1,6}	6
Milk, pasteurized, homogenized ²	1
Milk, whole, concentrated ^{2,4}	1
Okra	18
Onion rings, french fried and raw	14
Orange juice, concentrate	24
Oysters ²	8
Pastrami	6
Peaches	18
Peas	
black eye	12
green	14
Peas and carrots	14
Pepperoni	6
Peppers	14
Pies, fruit, baked and unbaked ²	
cream filled	6
fruit filled	12
Pineapple	12
Pineapple juice, concentrated	24
Pizza	6
Pizza shells	6
Pork	
barbecued	6
cutlets, boneless (restructured)	8
hocks, feet	6
hocks, smoked	3
loin, boneless, fabricated	8
slices, chops	8
wholesale cuts	8
Potatoes	
white, french fries, precooked rounds	12
white, hash brown	12
Raspberries	18
Rhubarb	24
Ravioli	6

TABLE 1 - GUIDELINES FOR STORING FROZEN FOODS AT 0°F OR BELOW

		Approximate Storage Life Months
Salami ^{2,3}		
cooked	. . . . .	3-4
dry	. . . . .	5
Sausage ^{2,3}		
beef	. . . . .	6
liver	. . . . .	3-4
New England style	. . . . .	4
pork, bulk style	. . . . .	3
pork links		
carton	. . . . .	$\frac{1}{2}$
can	. . . . .	9
pork, precooked, Polish, Italian	. . . . .	3-4
pork and beef, precooked	. . . . .	6
Scallops ²	. . . . .	8
Scrapple	. . . . .	6
Shrimp ²		
raw, peeled/unpeeled	. . . . .	8
raw, breaded, molded	. . . . .	8
Soups ⁵	. . . . .	12
Spinach	. . . . .	14
Spinach, chopped	. . . . .	10
Squash, summer and fall, cooked	. . . . .	24
Strawberries	. . . . .	15
Succotash	. . . . .	12
Sweet goods, yeast raised ²	. . . . .	2
Tamales	. . . . .	6
Topping, dessert	. . . . .	24
Tortillas, corn or wheat	. . . . .	18
Turkey ²		
boneless, cooked	. . . . .	7
boneless, raw	. . . . .	7
whole, ready-to-cook	. . . . .	9
gizzards	. . . . .	6
Veal ²		
cutlets, boneless, breaded (restructured)	. . . . .	9
diced, cutlets, breaded	. . . . .	9
boneless, fabricated	. . . . .	12
carcass, wholesale cuts	. . . . .	12
semi-boneless	. . . . .	12
Vegetables, mixed	. . . . .	12
Waffles ²	. . . . .	6

Footnotes

1. Any evidence that a precooked meal has been thawed is reason for discarding.
2. Many of the products listed herein are also storable under chill conditions (about 32°F).
3. These products suffer deteriorative changes as a result of freezing. If frozen storage is necessary, storage times indicated will tend to minimize rancidity development.
4. Storage life below 0°F is four months.
5. Cream style soups which have broken down during freezing will be satisfactory when heated.
6. These meals may be used for their intended purpose up to nine months after date of pack provided surveillance inspections performed at least every 30 days subsequent to the six months period result in the product being accepted for consumption.

CHILL STORAGE - SPECIFIC

The storage guidelines shown in Table 2 are based on:

- Receiving the product in top condition shortly after harvesting or processing
- Proper treatment of the product prior to arrival
- Proper packaging
- Proper (ideal) storage and humidity conditions prior to and after arrival

Since most chilled products are considered as "fresh", it is important for the storers to be aware that the quality acceptability of a product is at its peak when harvested, cut or otherwise prepared, and from this point on, quality slowly deteriorates. The rate of deterioration occurs more swiftly in some products than in others. The flavor of some items such as sausage, for example, which contains a mixture of spices, may become stronger with age. Accordingly, the storage life for many products listed in Table 2, may represent the lowest level of optimum acceptability.

An experienced food service operator will know the optimum storage life of each product he (she) serves. Others may have to examine products on a daily or occasional basis to check on product conditions. Often a product may degenerate in condition almost overnight. It is, therefore, important to schedule a product for use before it reaches its point of rapid degeneration.

Temperature

Chill storage is generally within a temperature range of 32° - 35°F. For some food items, better quality is maintained at temperatures higher or lower than these and are shown as accepted storage temperatures. Some items are damaged by slow freezing; for these, the average freezing points are given.

Humidity

Preferred relative humidities shown in the table are those which best inhibit the gain or loss of moisture in the item. Storage at higher relative humidities may allow water to condense on or be absorbed in the item, while at lower relative humidities, the item may dry and shrink.

Storage Compatibility of Fresh Fruits & Vegetables

Although it may be necessary to store various fresh fruits and vegetables together, there are some products which should be separated whenever possible. Apples, pears, bananas, peaches, plums, cantaloupes, ripe honey dew melons, avocados, tomatoes and other ethylene producing fruits or vegetables should not be stored with lettuce (causes russetting), carrots (become bitter), cucumbers, green peppers, acorn

or Hubbard squash (loss of green color). Odors from apples and citrus fruits are readily absorbed by meat, eggs and dairy products. Pears and apples acquire an unpleasant earthy taste and odor when stored with potatoes. Other combinations which should be avoided in storage rooms are apples or pears with celery, cabbage or onion, celery with onions or carrots, green pepper with pineapples and citrus fruit with any of the strongly scented vegetables. Green peppers can taint pineapples if the two are stored or shipped together. Onions, nuts, citrus fruit and potatoes should each be stored separately whenever possible.

Perishable Foods Compatibility Groups

For storage purposes, fresh fruits and vegetables may be divided into the following compatible groups as follows:

Group 1

Temperature: 32° to 34° F (1° to 1° C).

Relative humidity: 90 to 95 percent.

Atmosphere: Normally used on berries and cherries only—10 to 20 percent CO₂.

Ice: Never in contact with commodity.

Note. Most members of this group not compatible with *Group 6a* or *6b* because ethylene production by *Group 1* can be high, and thus harmful to members of *Group 6a* or *6b*.

Apples (except those varieties listed in *Group 3*.)

Apricots

Berries (except cranberries)

Cherries

Figs (not with apples, danger of odor transfer to figs; also see *Group 6a*)

Grapes (not fumigated with sulfur dioxide (SO₂) in vehicle and no chemicals that release SO₂ should be included in packages.

Peaches

Pears

Persimmons

Plums and prunes

Pomegranates

Quinces

Group 2

Temperature: 55° to 65° F (13° to 18° C).

Relative humidity: 85 to 95 percent.

Ice: Never in contact with commodity.

Avocados

Bananas

Eggplant (also see *Group 5*)

Grapefruit¹

Guava

Limes

Mangos

Muskmelons, other than cantaloupes

Casaba

Crenshaw

Honey Dew

Persian

Olive, fresh

Papayas

Pineapples (not with avocados, danger of avocados' odor absorption)

Tomatoes, green

Tomatoes, pink (also see *Group 4*)

Watermelons (also see *Groups 4* and *5*)

Group 3

Temperature: 36° to 41° F (2° to 5° C).

Relative humidity: 90 to 95 percent; cantaloupes about 95 percent.

Ice: In contact only with cantaloupes.

Apples (Grimes Golden and Jonathan (both, certain areas), Yellow Newton (California) and McIntosh.)

Cantaloupes

Cranberries

Lemons¹ (use 50 to 55° F for more than a month)

Lychees (also see *Group 4*)

Oranges¹ (Florida or Texas)

Tangerines

Group 4

Temperature: 40° to 45° F (4° to 7° C); beans 38° to 42° F (3° to 6° C).

Relative humidity: About 95 percent.

Ice: Never in contact with commodity.

Beans, snap

Lychees (also see *Group 3*)

Okra

Oranges¹ (California or Arizona)

Peppers, green (not with beans)

Peppers, red (if with green peppers, temperature adjusted toward top of range)

Squash, summer

Tomatoes, pink (also see *Group 2*)

Watermelons (also see *Groups 2* and *5*)

Group 5

Temperature: 50° to 55° F (10° to 13° C); ginger not below 55° F.

Relative humidity: 85 to 90 percent.

Ice: Never in contact with commodity.

Cucumbers

Eggplant (also see *Group 2*)

Ginger (not with eggplant, also see *Group 7*)

Potatoes (late crop)

Pumpkin and Squashes, winter

Watermelon (temperature adjusted for other members of group; also see *Groups 2* and *4*).

Group 6a

This group, except for figs, grapes and mushrooms, is compatible with *Group 6b*.

Temperature: 32° to 34° F (0° to 1° C).

Relative humidity: 95 to 100 percent.

Ice: Never in contact with asparagus, figs, grapes, and mushrooms.

Artichokes

Asparagus

Beets, red

Carrots

Endive and escarole

Figs (also see *Group 1*)

Grapes (not fumigated with sulfur dioxide (SO₂) in vehicle and no chemicals that release SO₂ should be included in packages.

Greens

Leek (not with figs or grapes)

Lettuce

Mushrooms

Parsley

Parsnips

Peas

Rhubarb

Salsify

Spinach

Sweet Corn

Watercress

Group 6b

This group is compatible with *Group 6a*, except for figs, grapes, and mushrooms.

Temperature: 32° to 34° F (0° to 1° C).

Relative humidity: 95 to 100 percent.

Ice: Contact acceptable for all.

Broccoli

Brussels sprouts

Cabbage

Cauliflower

Celeriac

Celery

Horseradish

Kohlrabi

Onions, green (not with rhubarb, figs, or grapes; probably not with mushrooms or sweet corn).

Radishes

Rutabagas

Turnips

Group 7

Temperature: 55° to 65° F (13° to 18° C).

Relative humidity: 85 to 90 percent.

Ice: Never in contact with commodity.

Ginger (also see *Group 5*)

Potatoes, early crop (temperatures adjusted for others)

Sweetpotatoes

Group 8

Temperature: 32° to 34° F (0° to 1° C).

Relative humidity: 65 to 70 percent.

Ice: Never in contact with commodity.

Garlic

Onions, dry

¹ Citrus fruits—Biphenyl fungicide may impart off odors to other commodities.

The above information was extracted from Lipton, W. J. and J. M. Harvey, Compatibility of Fruits and Vegetables During Transport in Mixed Loads, US Department of Agriculture, Agricultural Research Service, ARS 51-48 (September, 1972).

TABLE 2 - GUIDELINES FOR STORING CHILLED FOODS

Items	Average Freezing Point	Accepted Storage Temperature	Preferred Relative Humidity %	Approximate Storage Life (Days)
Artichokes, Globe	30	32	95	14
Artichokes, Jerusalem	28	32	90-100	150
Apples	29	32	90	120-240
Red delicious, Washington	30	32	90	120-240
Apricots	30	32	90	7-21
Asparagus, fresh ¹¹	31	32	95	10
to prevent chill damage				
extended storage	—	36	95	14-21
Avocados				
rough skinned	31	40-45	85-90	14-28
smooth skinned	31	55	85-90	14
Bananas				
green	31	56-58	90-95	7-10
ripe	—	56-58	85	2-4
Beans				
green or wax	31	45-50	95	7-10
lima, unshelled, shelled	31	32	95	7
Beef				
carcass and wholesale cuts	—	32-35	85-90	10-14
corned	—	32-35	85-90	9-11
ground	—	32-35	85-90	4
tongue, fresh	—	32-35	85-90	35-42
tongue, smoked	—	32-35	85-90	35-42
Beets, bunch	31	32	95	10-14
Beets, topped ⁶	30	32	95-100	120-180
Berries, black, rasp, logan,				
young, boysen, dew	31	32	95	2-3
Berries, straw	31	32	90-95	5-7
Blueberries	30	32-35	90-95	14
Bologna				
Lebanon	—	32-35	85-90	60
50%beef	—	32-35	85-90	12
Broccoli	31	32	95	10-14
Brussels Sprouts	31	32	95	21-35
Butter, prints and patties	—	32-35	under 55	30
Cabbage				
red	31.7	32	95-100	21-42
summer types	31	32	95-100	21-42
winter types	31	32	95-100	90-120
Chinese, shredded	31	32-35	—	7-10
Cantaloupe				
hard ripe ³	30	36	90-95	15
fullslip	30	32-35	90-95	5-14

TABLE 2 - GUIDELINES FOR STORING CHILLED FOODS

Items	Average Freezing Point	Accepted Storage Temperature	Preferred Relative Humidity %	Approximate Storage Life (Days)
Carrots ^{6, 12}				
table ready, sliced	30	32-35	—	10-14
mature, topped	30	32	98-100	150-270
immature, topped	31	32	98-100	28-42
bunch	20	32	95-98	10-14
Casaba melon	30	40-45	90	28-42
Catsup				
boat, envelopes ⁹	—	50	80-90	180
cup, foil pouch ⁹	—	50	—	365
Cauliflower ⁶	31	32	95	14-28
Celeriac	30	32	95-100	90-120
Celery				
northern grown ⁶	31	32	95	30-60
California or Florida ¹³	31	32	95	35-42
Cervelat ⁵				
dry	—	32-35	75-80	45
soft (thuringer)	—	32-35	85-90	14
Cherries, sweet ¹⁰	29	30-31	90-95	14-21
Chicory	30	32-34	85-95	10-20
Chives, potted	30	35-45	90-98	14
Cheese				
blue veined, natural	—	32-35	70-75	180
cheddar, natural	25	30-34	65-70	540
cottage	30	32-35	—	14
cream	—	32-35	70-75	120
mozzarella, natural	—	35	70-75	30
process American, piemento or				
Swiss loaf	25	32-35	65-70	540
sliced	—	32-35	65-70	360
parmesan	—	32-35	70-75	360
pizza blend	—	35	70-75	180
provolone, natural	—	35	70-75	360
Romano, natural	—	32-35	70-75	360
Swiss, natural	25	32-35	70-75	360
Chocolate drink	29	32-35	—	7
Clams, shucked	—	32-35	—	4
Cookie dough	—	32	—	90
Corn on the cob, top-iced	31	32	95	4-8
Cranberry				
fresh	30	36-40	90-95	60-120
sauce, cup ⁹	—	50	—	180
Cream				
half & half, including filled	31	32-35	—	7
sour, cultured	31	32-35	—	14
table, including filled	31	32-35	—	10
whipping	31	32-35	—	10

TABLE 2 - GUIDELINES FOR STORING CHILLED FOODS

Items	Average Freezing Point	Accepted Storage Temperature	Preferred Relative Humidity %	Approximate Storage Life (Days)
Crenshaw melon	30	45-50	90-95	14
Cucumbers	31	50-55	90-95	10-14
Currants	30	31-32	90-95	10-14
Dates, pitted, cured	1	32	70-75	180
Eggnog	28	32-35	—	14
Eggs, shelled				
fresh	27	29-31	80-85	150-180
oil processed	27	29-31	70-80	150-180
Eggplant ³	31	45-50	90-95	7-10
Elderberry	30	31-32	90-95	60-120
Fennel	30	32	90-98	60-120
Figs, fresh	27	32	85-90	7-10
Frankfurters, 50% beef, 50% pork				
carton	—	32-35	85-90	10
flexible package	—	32-35	85-90	21
French dressing, cup, boat or				
envelope	31	50	80-90	80-90
Fruitcake, fresh	—	40	50-60	300
Fruits, dried	22-25	32-40	50-60	180-360
Garlic, dry	30	32	65-70	180-210
Ginger, rhizomes	—	55	65	180
Gooseberries	30	31-32		90-95
14-28				
Grapefruit ^{8,9}	30	50-60	85-90	29-42
sections	—	35-45	—	540
Grapes				
American types	30	32	85	21-56
European types	28	30	90-95	60-180
Greens				
endive, escarole ⁶	31.9	32	95	14-21
collards, kale, rape, beet,				
mustard, turnip, chicory	31	32	95	10-14
Ham				
cured, canned	—	32-35	60-65	270
boneless, cooked	—	32-35	85-90	28
smoked ⁵	—	32-35	85-90	28
Honeyball, melon	31	45-90	90-95	21-28
Honeydew, melon	30	45-50	90-95	21-28
Horseradish, prepared	30	32	—	90
Horseradish root	29	32-32	95-100	300-360
Huckleberries	29	32	80-85	7-10

TABLE 2 - GUIDELINES FOR STORING CHILLED FOODS

Items	Average Freezing Point	Accepted Storage Temperature	Preferred Relative Humidity %	Approximate Storage Life (Days)
Jams, jellies, preserves				
boat, envelope ⁹	—	50	80-90	180
cup, foil pouch ⁹	—	50	—	365
Kohlrabi	30	32	95	14-28
Kumquats	29	33-35	85-90	60-120
Lamb, carcass, wholesale cuts	—	32-35	85	7-10
Lard, service style	—	45	90-95	120-240
Leeks	31	32	95	30-90
Lettuce				
iceberg	32	32-34	95-100	
leaf, romaine	32	32-34	95-100	5-8
table ready, whole or chopped	32	32-34	—	5-7
Lemons	30	55	85-90	30-90
Limes	29	48-50	85-90	42-56
Luncheon loaf	—	32-35	85-90	14
Mangoes	30	55	85-90	14-21
Margarine, prints and patties ¹	—	32-35	40-70	60-90
Milk				
buttermilk	31	32-35	—	14
chocolate flavored	29	32-35	—	7
fluid, pasteurized	30	32-35	—	7
ice mix, fresh, liquid	31	32-35	—	10
shake mix, fresh, liquid	31	32-35	—	10
Mushrooms	30	32-34	90	3-4
Mustard				
boat, envelope ⁹	30	50	80-90	90
cup, foil pouch ⁹	30	50	—	270
Nectarines	30	31-32	90	14-28
Okra	29	45-50	90-95	7-10
Olives	29	45-50	85-90	28-42
Onions ⁷				
Bermuda, dry	31	32	65-70	30-60
globe, dry	30	32	65-70	180-240
green	30.4	32	95	21-28
Spanish	31	32	65-70	90-180
peeled or green, table ready	31	32-35	65-70	5-7
Oranges				
California, Arizona	30	40-44	85-90	28-42
Florida, Texas	30	32	85-90	56-84
Temple, Tangelos	30	38-40	90-95	14-28
sections	—	35-45	—	540

TABLE 2 - GUIDELINES FOR STORING CHILLED FOODS

Items	Average Freezing Point	Accepted Storage Temperature	Preferred Relative Humidity %	Approximate Storage Life (Days)
Orange juice	30	32	—	21
Papaya	30	55-60	85-90	7-21
Parsley	30	32	95	30-60
Parsnips	30	32	98-100	60-180
Peaches	30	31-32	90	14-28
Peanut butter				
boat, envelope	—	50	80-90	180
cup, foil pouch	—	50	80-90	365
Pears ¹	29	29-31	90-95	120-240
Peas, unshelled	31	32	95	7-14
Peppers, sweet	31	45-50	90-95	14-21
Peppers, dry, chili	—	32-50	60-70	180
Pepperoni, dry	—	32-35	75-80	28
Persian melons	31	45-50	90-95	14
Persimmons	28	30	90	90-120
Pies				
fruit, fresh	—	35	80-85	3
fried, fresh	—	35	80-90	5
Pineapple				
mature, green ³	30	50-55	85-90	21-28
ripe	30	45	85-90	14
Plums	30	32	90-95	21-28
Pomegranates	27	32	90	14-28
Pork, wholesale cuts	—	32-35	85-90	5
Poultry, all forms	27	30	95-100	5
Potatoes				
sweet	30	55-60	85-90	120-210
white	31	40-50	90	120-150
peeled, table ready	31	35	95	5-9
Prunes, Italian	30	32	90-95	14-21
Pumpkins	31	50-55	70-75	60-90
Quinces	28	31-32	90	60-90
Radishes				
spring, topped	31	32	95	21-28
winter, topped	31	32	95-100	60-120
Rhubarb	31	32	95	14-28
Rolls, brown and serve	—	32	80-85	21
Rutabagas, topped	30	32	98-100	120-180
Salad dressing, cup, boat				
envelope ⁹	31	50	80-90	90
Salmon steaks	—	32-35	85-90	28

TABLE 2 - GUIDELINES FOR STORING CHILLED FOODS

Items	Average Freezing Point	Accepted Storage Temperature	Preferred Relative Humidity %	Approximate Storage Life (Days)
Salami ⁵				
dry	—	32-35	75-80	60
cooked	—	32-35	85-90	14
Salsify	30	32	98-100	60-120
Sausage				
liver	—	32-35	85-90	14
New England style	—	85-90	10	
pork links	—	32-35	85-90	14
pork bulk	—	32-35	85-90	14
Scallops	—	32-35	—	4
Shallots	31.7	32	95	21-28
Shortening compound, can carton, cube	—	32-35	under 55	1800
Syrup, imitation maple, cup,boat, envelope ⁹	—	50	80-90	365
Spinach	31.5	32	95	10-14
Squash				
Hubbard	30	50-55	70-75	180
acorn	30.5	50	70-75	35-56
summer	31	32-40	90	4-5
Swiss chard	31	32	95	10-14
Tangerines	30	32	85-90	14-28
Tomatoes				
mature, green ³	31	55-70	85-90	7-21
pink	31	50-55	85-90	3-5
firm, ripe	31	45-50	85-90	4-7
full color development	31	32-35	85-98	21
Turnips	30	32	95	120-150
Watercress	31	32-35	90-95	7
Watermelon	31	40-50	85-90	14-21
Yeast, bakers				
active, dry	—	30-39	60-70	180-360
compressed cake	—	30-32	80-90	30-90
Yogurt, plain or fruit flavored	30	30-35	—	30

Footnotes

1. Soybean oil margarine is considered by some authorities to be less stable than cottonseed oil margarine.
2. The length of time apples can be held successfully in cold storage at 32°F, unless otherwise specified, will vary with the variety, the district where grown, as well as with their condition when harvested. Controlled atmosphere can extend storage life an additional two to four months.
3. Damage will result if item is stored at lower temperature than indicated.
4. For best ripening, pears should be held at about 65°F for two to three days prior to serving.
5. Very susceptible to mold growth on surface. Inspect and wipe often.
6. This item keeps better unwashed.
7. This commodity should not be stored with items such as apples and grapefruit since they will acquire an onion taste. Compartments should be kept dark.
8. The refrigerated storage of Florida grapefruit is not recommended for more than a limited period and then only if the fruit is inspected at intervals. Grapefruit is very susceptible to rind pitting and aging at comparatively low temperatures, especially at 38° F (as compared with 43°F). At higher temperatures, such as 50°F the rapid development of decay is troublesome.
9. Keeping time in uncontrolled storage (dry space) is less than three months because of desiccation and because of swelling due to microbial activity.
10. Sweet cherries packed in sealed polyethylene bag liners can be stored for up to 21 days.
11. Asparagus held too long at 32°F is subject to chill injury. The butts of asparagus should be placed in absorbent material during storage.
12. Carrots may become bitter if stored with fruits which give off ethylene, such as apples and pears. If carrots are bitter, they should be stored at room temperature for several days before use.
13. Polyethylene liners will extend storage life an additional 7-14 days.

STORAGE OF CANNED PRODUCTS

Items in this group consist of food products that are canned or otherwise processed to the extent that such items may, under normal conditions, be stored in nonrefrigerated spaces. While these products (canned) are not nearly as susceptible to spoilage as frozen and chilled items, spoilage can and will occur if the products are mishandled, improperly stored, or stored for excessive periods of time. It is important to remember that the length of storage should be based on the date of packing and not the date of receipt.

Careful, correct storage methods not only prevent damage to items in storage, but assure speed and efficiency in the receipt, handling and distribution of such items. Shipments should be segregated and clearly marked so that the oldest lots, as packed and not received, are distributed first, unless the newer lots show evidence of deterioration or spoilage.

The particular method used for storing each item depends on the nature of the container, the nature of the commodity, and the bursting or breaking strength of the bottom layers. For example, items packed in glass containers with cork stoppers should be inverted to prevent the drying out of the stoppers and subsequent leakage. It is also important to recognize that products containing spices may get stronger with age.

Storage Precautions

Care should be taken that items are not stacked so high as to cause a bursting or crushing of the bottom layers; nor should items be stacked so high that the top layer is subject to the higher temperature more prevalent near the ceiling. Stacking in close proximity to steam or other heated pipes must be avoided.

Pallets or dunnage must be used to raise products off the floor and individual lots piled in such a way as to permit the circulation of air around the lots. Items should not be stored in large masses in corners of the storeroom or directly against walls; such storage leaves insufficient room for cleaning and inspecting. Palletized storage facilitates handling of the products and reduces losses by breakage in handling. All items should be properly cross-stacked (interlocked) to keep the stack solid and prevent it from toppling.

Storage Periods

The safe storage period for canned food items varies greatly, depending on such elements as temperature, humidity, care in handling, protection from the weather, quality of the food when received and the method of packing. Safe storage periods become very uncertain at extremes of temperature.

An item which has been on hand beyond the safe storage period should be inspected carefully for spillage, leakage, or other damage and if still good, used as soon as possible and such items should be given priority of usage over newer stocks.

Age. All foodstuffs are subject to varying degrees of natural deterioration which is inherent in the food itself. It should not, however, be confused with the action of micro-organisms, chemical agents, or other outside agents. Such facts compel an observance of the basic principle of storage that the oldest lots of an item always should be used first, except under conditions indicated at the beginning.

Freezing. If foods containing relatively large amounts of water are frozen, the usefulness of such products has not been harmed. However, physical appearance may suffer due to changes in consistency and texture (softening). Emulsions such as canned cheese and butter, prepared mustard, and mayonnaise may be broken (separated) by freezing although the food is not spoiled. Freezing causes loss in palatability of some products and may cause powdering of the protective lacquer of cans and loss of its adhering power.

Ventilation. Where sharply fluctuating temperature and high humidity prevail, the lack of proper ventilation may cause excessively high temperatures. Proper ventilation is one of the most important factors in protecting foods, particularly in warm climates. In extreme cases, it may be necessary to open doors and use fans to induce circulation.

Light. Damage from light is restricted to products that are packed in glass or transparent containers. Exposure causes color changes and may affect the flavor of foods containing, or composed of, edible oils and fats.

Spoilage Factors

Rust. Rust, unless it actually penetrates the can causing leakage, will not injure the contents or render them inedible.

Dents. Dents, unless so severe as to cause leakage, do not indicate that the contents are in any unsatisfactory condition.

High Temperature. High temperatures are detrimental to all canned provisions and reduce the storage life to a considerable degree.

Quality Change. Fading of color, loss of flavor, or softening of contents are due to chemical action and natural aging process.

Discoloration. Discoloration of contents on the inside of cans may be caused by chemical action. Discoloration is found usually in products containing sulphur compounds, i.e., corn, peas, and meat products.

Swells. Swells, springers and flippers are caused either by chemical or bacterial action, or by overfilling. Regardless of the primary cause, cans exhibiting such defects should be discarded or referred to USDA or state inspection officers for recommendation for disposition.

Pinholing. Pinholing is due to chemical action of the food acids on the tin. Pinholing is more often found in enamel lined cans, brine-packed or vinegar-packed items, and in water-packed fruit.

Flat Sours. Flat sours are caused by bacterial action, causing changes in odor, color, or turbidity of the product, but not accompanied by gas production which would cause swelling of the can.

Explanations for Table 3

As a rule of thumb, storers should plan to turn their inventory of canned stock every three months. Table 3 indicates the maximum storage periods for acceptable quality retention.

THE IMPORTANT POINT TO REMEMBER IS THAT STORAGE PERIODS ARE DRAMATICALLY AFFECTED BY TEMPERATURE AS SEEN FROM THE TABLE.

Warehouses must be heated during cold weather to a temperature of 40°-50°F (50°F is preferred by workers). In hot weather, warehouses must be ventilated by heavy duty fans located in the roof or rear end of the building. Fans should be equipped with insect screens. The best procedure is to use the fans to bring air into the building through the insect screens and exhaust the air through shipping doors or louvered vents (with insect screens).

A normal maximum temperature of 80°F may be maintained in a well insulated building, even in warm climates, if the ventilation is maintained over a 24 hour period. (The building will cool off during the night and retain the coolness well into the day).

It is recognized that warehouse temperatures in warm climates may go well above the 70°F shown in Table 3. This simply means that the storage life of products will be curtailed accordingly. It is therefore imperative in warm climates to accelerate inventory turns.

Over-aged Stock. Any product which is received or stored for periods longer than those shown on the storage life table does not necessarily mean that the product is unfit or undesirable. Items stored for periods in excess of the storage life shown in the table, but at temperatures lower than those listed therein, should not be automatically considered as over-age stock.

Containers. Since the container is one of the factors in the overall keeping period of an item, the container should be considered if it markedly differs, that is, coffee in bags vs. coffee in vacuum-packed tins. Thus, warehouse personnel should be guided by the appearance, odor, color and condition of the item. The desirable properties of flavor, odor and taste often depend upon very unstable or volatile components, and deterioration may result from a breakdown or loss of these constituents. However, excessive heat and inadequate packaging can be major factors contributing to deterioration.

TABLE 3 - GUIDELINES FOR STORING CANNED FOODS

Item	Packaging	Keeping time in Months	
		40°F	70°F
Almond Paste	Can	36	9
Apples:			
regular pack	Can	48	24
butter	Can/Jar	36	18
sauce, dietetic pack	Can	48	24
juice, single strength	Can	36	18
rings, spiced	Can	36	18
Apricots:			
regular pack	Can	48	24
dietetic pack	Can	36	18
Apricot Nectar, regular	can	48	24
Asparagus	Can	36	18
Bacon			
sliced	Can	48	24
cooked	Can/Flex Pack	48	24
Bakery Mixes, extended shelf			
life, except biscuit, cheese cake,			
cookie, corn bread, or pie crust			
mix, see specific item	Can	72	36
Baking Powder	Can	24	12
Beans			
green	Can (plain)	36	18
.	Can (enamel)	48	24
kidney	Can	72	36
lima	Can	72	36
pinto	Can	72	36
sprouts	Can	48	24
wax	Can (plain)	36	18
.	Can (enamel)	48	24
white, with pork,			
in sweet sauce	Can	72	36
in tomato sauce	Can	48	24
refried	Can	72	36
Beef			
chunks w/natural juices	Can	60	36
corned	Can	60	36
with gravy	Can	72	36
with spiced sauce	Can	60	24
Beets	Can	36	18
Berries, black, etc.	Can	36	18
beverage base			
cocoa, powder	Can	72	36
imitation, liquid	Bottle	24	12

FOOD FACTS

XIII - WAREHOUSING GUIDELINES

TABLE 3 - GUIDELINES FOR STORING CANNED FOODS

Item	Packaging	Keeping time in Months	
		40°F	70°F
Beverage base, liquid for			
post mix			
colapi, pepper	Can	2	12
fruit punch, lemon-lime,			
orange, root beer, ginger			
ale, grape	Can	18	8
Biscuit mix	Can	36	18
Blueberries	Can	36	18
Bouillon dried, cubes,			
beef or chicken	Can	48	24
Cabbage, red, sweet/sour . . .	Can	48	24
Candy			
coated (bridge mix)	Can	72	36
hard	Can	72	36
Carrots	Can	60	30
Catsup			
regular	Bottle	48	24
regular	Can	36	18
Cherries			
dietetic pack	Can	36	18
maraschino	Jar	36	18
RTP (red, tart, pitted) . . .	Can	36	18
sweet, dark	Can	36	18
sweet, light	Can	36	18
Chicken	Can	60	36
Chili con carne w/o beans . . .	Can	48	30
Chili sauce	Bottle	48	24
Chives, dried	Can	24	12
Chocolate syrup, beverage . . .	Can	72	36
Chutney sauce	Jar	48	24
Clams	Can	72	36
Cocoa, Natural	Can	72	36
Coconut, sweetened	Can	36	18
Coffee	Can	18	12
Cookie mix, chocolate & sugar .	Can	36	18
Corn bread mix	Can	24	12
Corn, cream & whole grain style	Can	72	36
Corn meal	Can	48	24
Crabapples, spiced	Can	36	18
Crab	Can	72	36
Cranberry sauce	Can	36	18
Cranberry juice cocktail	Can	30	12
Cream			
substitute	Can	48	24
whipping, dry	Can	8	6

FOOD FACTS

XIII - WAREHOUSING GUIDELINES

TABLE 3 - GUIDELINES FOR STORING CANNED FOODS

Item	Packaging	Keeping time in Months	
		40°F	70°F
Dessert powder			
gelatin base, all flavors ⁴	Can	72	36
starch base, all flavors ⁴	Can	48	24
instant, all flavors ⁴	Can	48	24
Egg mix, dried	Can	60	36
Eggs, whole, dry	Can	72	36
Enchiladas	Can	48	24
Figs	Can	48	24
Flavoring			
imitation maple or vanilla	Bottle	indef	indef
non-alcoholic	Bottle	24	18
tablet, im. maple or vanilla	Bottle	indef	indef
Food coloring			
liquid	Bottle	indef	indef
paste	Jar	48	24
Frankfurters	Can	60	35
Fruit, candied	Jar	12	6
Fruit cocktail	Can	48	24
Fruit mix, freeze dried	Can	24	12
Fruit puree	Can	48	24
Grape juice, single strength	Can	24	12
Grapefruit	Can	48	24
juice, single strength	Can	48	24
Grapefruit-orange juice			
blend, single strength	Can	48	24
Grapefruit-pineapple juice			
blend, single strength	Can	48	24
Ham chunks	Can	60	36
Hamburgers, without gravy	Can	60	36
Hash, corned or roast beef	Can	72	37
Hominy, whole	Can	72	36
Honey	Jar	48	24
Ice cream, Ice milk			
mix, powder	Can	36	18
Icing mix	Can	72	36
Jam, fruit	Can/jar	36	18
Jelly, fruit	Can/jar	36	18
Lime juice, single strength	Can	24	12
Luncheon meat	Can	60	36

FOOD FACTS

XIII - WAREHOUSING GUIDELINES

TABLE 3 - GUIDELINES FOR STORING CANNED FOODS

Item	Packaging	Keeping time in Months	
		40°F	70°F
Malted cereal syrup	Can	48	24
Margarine	Can	36	18
Marmalade	Jar	36	18
Mayonnaise	Can/jar	12	6
Meat spread	Can	36	18
Meringue powder	Can	48	24
Milk			
dry, non-fat	Can	36	18
evaporated ²	Can	24	12
filled dry, inc. chocolate	Can	24	12
ice & milk shake mix, dry	Can	24	12
malted, dry	Can	48	24
whole, dry	Can	6	3
Mincemeat	Can	48	24
Molasses	Can	48	24
Mustard, prepared	Can/jar	36	18
Mushrooms	Can	48	24
Noodles, chow mein	Can	8	4
Nuts			
shelled, roasted	Can	60	24
Okra	Can	48	24
Olives			
green	Jar	48	24
ripe	Can	48	24
Olive oil	Can	18	6
Onions, whole, acified	Can	36	18
Orange juice, single strength	Can	48	24
Peaches			
dietetic pack	Can	48	24
regular pack	Can	48	24
Peanut butter	Can/jar	36	18
Pears			
dietetic pack	Can	36	18
regular pack	Can	36	18
Peas			
blackeye	Can	72	36
green	Can	72	36
Peas and carrots	Can	60	30
Peppers			
pickled, cherry	Jar	36	18
jalapeno	Can	24	12
red sweet	Can	48	24

FOOD FACTS

XIII - WAREHOUSING GUIDELINES

TABLE 3 - GUIDELINES FOR STORING CANNED FOODS

Item	Packaging	Keeping time in 40°F	Months 70°F
Pickles			
cucumber, cured	Jar	48	24
.	Can	24	12
cucumber, fresh pack	Jar	36	18
.	Can	18	9
Mixed	Jar	48	24
.	Can	24	12
Relish	Jar	48	24
.	Can	24	12
Pie crust mix	Can	36	18
Pie filling, prepared fruit			
apple, blueberry, cherry			
peach, lemon ⁵	Can	24	12
Piementos	Can	48	24
Pineapple			
dietetic pack	Can	48	24
juice, single strength	Can	48	24
regular pack	Can	48	24
Plums			
dietetic pack, red	Can	36	18
dietetic pack, green	Can	48	24
regular pack, red	Can	36	18
regular pack, green	Can	48	24
Popcorn, unpopped	Can	72	36
Potatoes			
sticks	Can	48	24
sweet	Can	48	24
white	Can	60	30
white, dried, granules	Can	60	36
white, dried, slices	Can	36	18
Prunes, dried	Can	36	18
Pumpkin	Can	48	24
Raisins, dried	Can	36	18
Ravioli w/meat sauce	Can	48	24
Salad dressing			
spoonable ¹	Can/jar	8	5
pourable ¹	Bottle	7	5
Salad oil ²	Can	24	12
Salmon	Can	72	36
Sauces, hot, kitchen, meat,			
soy or worcestershire	Bottle	60	30
Sauerkraut	Can	36	18
Sardines	Can	72	36
in tomato sauce	Can	—	15
Sauce mix, brown gravy,			
spaghetti, taco seasoning	Can	36	18

FOOD FACTS

XIII - WAREHOUSING GUIDELINES

TABLE 3 - GUIDELINES FOR STORING CANNED FOODS

Item	Packaging	Keeping time in Months	
		40°F	70°F
Sausage, pork, link	Can	60	36
Shrimp	Can	72	36
Syrup			
blended	Can	72	36
maple, imitation	Bottle/can	72	36
Soup, condensed ³	Can	72	36
Soup, dehydrated			
beef, vegetable, noodle	Can	36	18
chicken noodle	Can	60	30
green pea	Can	60	30
onion	Can	60	30
ready to serve	Can	48	24
tomato, vegetable, noodle	Can	48	24
Soup and gravy base			
beef, chicken, ham flavored	Can/jar	60	30
Sour cream sauce mix	Can	24	12
Spinach	Can	48	24
Tamales	Can	48	24
Tomato juice			
concentrated 3 to 1	Can	36	18
single strength	Can (plain)	36	18
.	Can (enamel)	48	24
paste	Can	36	18
puree	Can	48	24
regular	Can	48	24
Tomatoes and okra	Can	48	24
Topping, dessert			
prepared, ice cream, non-acid syrup	Can	72	36
prepared, ice cream, fruit acid syrup	Can	36	18
Tuna			
dietetic water pack, no salt added	Can	72	36
oil pack	Can	72	36
water pack	Can	72	36
Turkey			
regular	Can	72	36
loaf	Can	72	36
Vegetable juice, single strength	Can	36	18
Vinegar	Bottle	60	30
Yeast, bakers active dry	Can	6	1

Footnotes

1. Separates at high temperatures or after freezing.
2. When held below 32°F, may show solid material which will disappear on warming.
3. Cream style soups break down on freezing, but are not spoiled.
4. Highly susceptible to damage by moisture.
5. Freezing alters appearance of starch thickening. Baking restores desirable appearance.

STORAGE OF ITEMS REQUIRING SPECIAL CARE

Items in this group consist of food products that are dried or dehydrated or otherwise subject to infestation, or rapid deterioration of quality, or direct spoilage if not handled properly.

Careful, correct storage methods not only prevent damage to items in storage, but assure speed and efficiency in the receipt, handling and distribution of such items. Shipments should be segregated and clearly marked so that the oldest lots, as packed and not as received, are issued first, unless the newer lots show evidence of deterioration or spoilage.

The particular method used for storing each item depends on the nature of the container, the nature of the commodity, and the bursting or breaking strength of the bottom layers. For example, flour, cornmeal or rice may have to be stored in racks to prevent crushing of the bags.

Storage Precautions

Care should be taken that items are not stacked so high as to cause a bursting or crushing of the bottom layers; nor should items be stacked so high that the top layer is subject to the higher temperature more prevalent near the ceiling. Stacking in close proximity to steam or other heated pipes must be avoided.

Pallets or dunnage must be used to raise products off the floor and individual lots piled in such a way as to permit the circulation of air around the lots. Bagged items and those requiring fumigation and insect control should not be stored in large masses in corners of the storeroom or directly against walls; such storage leaves insufficient room for cleaning and inspecting. Palletized storage facilitates handling of the products and reduces losses by breakage in handling. All items should be properly cross-stacked (interlocked) to keep the stack solid and prevent it from toppling.

Storage Periods

The safe storage period for dry food items varies greatly, depending on such elements as temperature, humidity, care in handling, protection from the weather, quality of the food when received and the method of packing. Safe storage periods become very uncertain at extremes of temperature.

An item which has been on hand beyond the safe storage period should be inspected carefully for spillage, leakage, or other damage and if still good, used as soon as possible and should be given priority of usage over newer stocks.

Causes of Product Deterioration

Age. All foodstuffs are subject to varying degrees of natural deterioration which is inherent in the food itself. It should not, however, be confused with the action of micro-organisms, chemical agents, or other outside agents. Such facts compel an observance of the basic principle of storage that the oldest lots of the item always should be used first, except under conditions indicated at the beginning.

Insects (roaches, flies, weevils, and moths). Insects can cause great damage to stored food, attacking both natural and manufactured food. Food stored at temperatures between 60° and 90°F is especially attractive to insects. Infested supplies must be segregated and if not too heavily infested, may be "reconditioned" for use. Cornmeal, especially, is susceptible to insect infestation and rancidity. Insect repellents should be used carefully so as not to contaminate the foods or cause damage by the absorption, by the food, of the fumigant or insecticide flavor. Roaches and flies not only contaminate the foods but may spread disease.

Rodents (rats and mice). Rodents not only physically destroy food by feeding, chewing and cutting the bags for nests or nesting material, but also contaminate food with their excreta and hairs. Rodents are carriers of filth and disease. The importance of controlling these pests is evident and the most effective method of control is to prevent entry of these animals.

Freezing. Dry products such as grains, flour, sugar, starch, cereals and dehydrated foods ordinarily are not injured by freezing.

Heat (high temperatures). A high temperature over long periods of time is very detrimental to the keeping of almost all food products. High storage temperature encourages bacterial growth, mold growth and insect infestation and is particularly dangerous when accompanied by high humidity. Chemical action may accelerate, causing rancidity in some items.

Flour and associated products (barley, cereals, cornmeal, cornstarch, cracker and biscuit, hominy, noodles, oats, rice, spaghetti and macaroni, tapioca, and uncooked wheat) are subject to insect infestation, particularly at high temperatures. Flour and cereals will absorb odors and should be kept away from food items or materials giving off distinctive odors.

Cocoa will keep for years under cool, dry storage conditions. the Formation of a white "bloom" (described as a "whitening" or "graying" due to storage under fluctuating temperature) has little or no effect on the flavor of cocoa. Long periods of storage at higher temperature may cause mustiness or rancidity. Cocoa does absorb moisture and odors. Cans, therefore, should be kept tightly closed. Roasted, ground coffee rapidly develops a weak and stale flavor. If coffee is not hermetically sealed, it will absorb odors affecting flavor.

Moisture (humidity). High humidity is detrimental to stored food items in many respects, accelerating the growth of bacteria and molds, promoting insect infestation and causing mustiness in flour, rice and similar foods. High humidity causes products which readily absorb moisture, such as sugar and salt, to cake and become hard. Tea will absorb odors and high humidity causes it to become musty and sour.

It should be emphasized that dehydrated products are perishable and should not be handled or stored carelessly. Such products are subject to moisture absorption, insect infestation and mold. AS loss of flavor and discoloration (darkening) will occur with age. This action is progressive and is accelerated at high temperatures. Dried vegetables and fruits are subject to insect infestation and molding (particularly fruits) and should be inspected at frequent intervals.

Ventilation. Where sharply fluctuating temperature and high humidity prevail, the lack of proper ventilation may cause excessively high temperatures. Proper forced

ventilation is one of the most important factors in protecting foods, particularly in warm climates. See the subsection on The Storage of Canned Products.

Over-aged Stock. Any product which is received or stored for periods longer than those shown on the storage life table does not necessarily mean that the product is unfit or undesirable. Items stored for periods in excess of the storage life shown in the table, but at temperatures lower than those listed therein, should not be automatically considered as over-age stock.

Containers. Since the container is one of the factors in the overall keeping period of an item, the container should be considered if it markedly differs, that is flour in bags vs. cans; coffee in bags vs. coffee in vacuum-packed tins. Thus buying consideration should be guided by the appearance, odor, color and condition of the item.

Dry products are not always subject to the same spoilage as are other foods. Their desirable properties of flavor, odor and taste often depend upon very unstable or volatile components, and deterioration may result from a breakdown or loss of these constituents. However, excessive heat and moisture, contamination by insects, rodents and micro-organisms, dirt and dust, and inadequate packaging and packing can be major factors contributing to deterioration.

Explanations for Table 4.

The storage periods shown in Table 4 represent the maximum times (from packing) before quality deterioration can be expected to become noticeable. As can be seen from Table 4, temperature is the main consideration, although packaging is almost as important.

THE BEST PROCEDURE IS TO MAINTAIN OPTIMUM TEMPERATURES AND TURN INVENTORY EVERY TWO MONTHS, PARTICULARLY IN WARM CLIMATES.

Be forewarned, however, that infestation (the hatching of weevils) in flour, corn-meal, rice and other grains may occur in a shorter period of time if temperatures escalate well above 80° or 90°F and hold this level for several days.

NOTE:

Tempering: If grain products and other dried foods are held at cooler temperatures (below 40°F) or in a freezer for safekeeping, they should be brought back to room temperature gradually, or used directly. Temperatures well above room temperatures should be avoided after chill or freezer storage. Mistreatment of this sort will promote mustiness and other off-flavors, depending on the product.

Extremes in temperatures, with rapid changes, promote condensation caused by hydrostatic atmospheric pressure. The rate of condensation depends on the product and the packaging material.

TABLE 4 - GUIDELINES FOR STORING FOODS REQUIRING SPECIAL CARE

Item	Packaging	Keeping time in Months	
		40°F	70°F
Antioxidant compound	Bag	60	36
Apricots, dried	Carton	24	3
Bakery mixes	Bag/carton	12	6
Baking powder	Can	24	12
Baking soda	Carton	indef	indef
Barley, pearl ¹⁰	Bag/carton	36	24
Beans, Dry ⁵	Bag/carton	24	12
Beverage base powder	Envelope	48	24
Bread crumbs	Bag	8	4
Cake, fresh			
layer, coffee	—	(2days)	—
loaf	—	(4days)	—
Candy			
carmel	Box	12	9
coated (bridge mix)	Box	24	12
starch jelly	Box	24	12
Cereal			
quick cooking ¹⁰	Carton	12	12
ready to eat, rolled oats	Package	24	12
sugar coated ¹⁰	Package	12	12
Chalupa shells, corn	Container	12	6
Cheese, grated	Container	18	6
Chewing gum	Carton	8	4
Chocolate, cooking			
semi-sweet chips ⁷	Package	36	18
unsweetened ⁷	Carton	48	24
Cocoa, natural	Carton	36	18
Coconut, sweetened	Container	24	6
unsweetened	Bag	24	6
Coffee, Instant	Envelope	36	18
.	Jar	72	36
roasted and ground	Pouch	9	2
Cookies	Carton	6	4
Corn chips	Package	1	1/2
Corn flake crumbs	Carton	24	12
Corn meal	Package	24	12
Crackers			
graham	Carton	4	2
other than graham	Carton	12	6
crumbs	Bag	12	6
Cream substitute	Envelope	48	24
Cream of tartar	Container	indef	indef
Cup, ice cream, edible	Box	24	12
Currants, dried	Carton	24	12

TABLE 4 - GUIDELINES FOR STORING FOODS REQUIRING SPECIAL CARE

Item	Packaging	Keeping time in Months	
		40°F	70°F
Dessert powder			
gelatin base, all flavors ⁶	Package	36	18
starch base, all flavors ⁶	Package	36	18
instant, all flavors ⁶	Carton	36	18
Doughnuts			
cake	Package	(3 days)	—
yeast	Package	(1 day)	—
Emulsifier, bread and rolls	Bag	24	12
Flour			
Rye ⁹	Bag	24	12
Wheat	Bag	24	12
Fruitcake	Box	12	6
Fry mix, breading	Bag	36	18
Garlic, dry	Box	5	4
Gelatin, plain, edible	Container	72	36
Hominy, grits	Container	24	12
Inhibitor, mold, bread & rolls ⁶	Bag	18	9
Jelly, fruit	Package	24	12
Lard	Carton	12	6
Macaroni ⁶	Carton	72	36
Marshmallow	Container	12	9
Milk,			
chocolate, dry, vac. pack	Envelope	40	20
no vacuum pack	Envelope	24	12
dry, non fat	Drum/bag/carton	24	12
Monosodium glutamate	Container	indef	indef
Noodles, egg ⁶	Carton	72	36
Nuts, unshelled	Bag	24	12
Parsley, dehydrated	Can	30	24
Peas, dried ⁵	Bag/carton	24	12
Pie shell, graham cracker	Container	8	4
Popcorn, unpopped	Carton	2	1/4
.	Cello bag	24	3

TABLE 4 - GUIDELINES FOR STORING FOODS REQUIRING SPECIAL CARE

Item	Packaging	Keeping time in Months	
		40°F	70°F
Potato			
Chips	Package	1	1/2
White, dehydrated slices	Poly bag	16	8
.	Kraft bag	12	6
Prunes, dried	Carton	18	9
Raisins, dried	Carton	18	9
Rice			
instant ⁶	Carton	36	18
milled ⁶	Bag	36	24
parboiled ⁶	Container/bag	24	12
Rolls, fresh			
bagel	Package	(1 day)	--
sweet or finger	Package	(2 days)	--
english muffins	Package	(7days)	--
Salt			
celery, garlic, onion	Container	72	36
substitute	Envelope	indef	indef
table	Bag/envelope	indef	indef
Shortening compound ⁴			
bakery type ²	Cube/can	48	24
deep fry cooking, fluid	Can	48	24
deep fry cooking, plastic	Can	48	24
general purpose, regular	Can/cube	48	24
general purposes, high stability	Can/cube	60	30
Soups, dehydrated			
beef, instant	Package	24	12
beef, noodle	Package	24	12
chicken, chunk	Package	24	12
chicken/chicken flavor, instant	Package	24	12
chicken, noodle	Package	24	12
cream of onion, instant	Package	24	12
cream of potato, instant	Package	24	12
green pea	Package	24	12
onion	Package	24	12
onion, instant	Package	24	12
vegetable	Package	24	12
Soup and gravy base			
beef flavored	Envelope	24	12
chicken flavored	Envelope	24	12
ham flavored	Envelope	24	12
Spaghetti	Carton	72	36
Spices, seasoning herbs	Can	48	24
.	Container	36	18

TABLE 4 - GUIDELINES FOR STORING FOODS REQUIRING SPECIAL CARE

Item	Packaging	Keeping time in Months	
		40°F	70°F
Starch			
corn, edible ¹⁰	Carton	60	36
pregelatinized, edible	Bag	96	48
Sugar			
Brown ⁸	Carton/bag	36	18
Confectioners ⁸	Carbon/bag	36	18
refined, granulated ⁸	Bag/envelope	indef	indef
substitute	Envelope	indef	indef
Tapioca ^{6, 10}	Carton	60	48
Taco shells, corn	Container	12	6
Tea			
Black, bags or loose	Can/carton	36	18
Instant	Envelope	36	18
Yeast food	Bag	48	24

Footnotes

1. Flour should be stored under cool, dry conditions. The major problem is protection against dampness, insects and rodents. Low temperatures, 32° - 40°F protect against insects, relative humidity greater than 70 percent leads to mustiness. Best storage conditions are at temperatures below 50°F and approximately 60 percent relative humidity.
2. Humidity above 90 percent will cause caking. "Caked" salt is usable.
3. When held below 32°F may show solid material which will disappear on warming.
4. If held above 90°F, changes may occur in texture unfavorable to normal creaming properties.
5. High temperatures harden, high humidity causes molding.
6. Highly susceptible to damage by moisture.
7. Do not store near other material capable of imparting odor to chocolate.
8. Keeping time based on relative humidity not more than 60 percent. For storage longer than one month, sugar should be covered with tarpaulins and not stored on damp or concrete floors or near cold walls.
9. Rye flour loses its most delicate flavor after two months at 40°F, or one month at 70°F. After this time, further flavor change is very slow. It is said that only experts can detect this first, subtle flavor change.
10. The storage time of these grain products is taken from the 1969 edition because the storage time is shorter.

STORAGE OF JUNIOR AND INFANT FOODS

Items in this group consist of food products utilized for feeding young children and infants. They are placed in a separate group because they are apart from the mainstream of items used by school and institutional food services and the commercial trades. Items in this group are relative primarily to products donated to needy households by the USDA.

Storage guides for items in Table 5 are the same as for similar items discussed in Tables 3 and 4.

TABLE 5 - GUIDELINES FOR STORING JUNIOR & INFANT FOODS

Item	Packaging	Keeping time in Months	
		40°F	70°F
Apples			
strained	Jar	36	18
junior food	Jar	36	18
Apricots, strained	Jar	36	18
Baby formula preparation	Can	24	12
Banana, strained	Jar	24	12
Beans, green, strained	Jar	36	18
junior food	Jar	36	18
Beef, liver, pork or veal			
strained	Jar	36	18
junior food	Jar	36	18
Beef broth, strained	Jar	36	18
Beets			
strained	Jar	24	12
junior food	Jar	24	12
Carrots			
strained	Jar	48	24
junior food	Jar	48	24
puree	Can	60	30
Cereal, strained barley	Container	24	12
Chicken, strained	Jar	36	18
Custard pudding, strained	Jar	24	12
Peaches, strained	Jar	36	18
Pears, strained	Jar	40	20
Peas, strained	Jar	40	20
Prunes, strained	Jar	18	9
Soup, chicken, strained	Jar	36	18
Spinach, strained	Jar	36	18
junior food	Jar	36	18
puree	Can	48	24
Vegetables, mixed, strained	Jar	36	18

GROUP XIV - APPENDIX

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Note

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Kenai Peninsula Borough School District	Soldotna AK
Kentucky Valley Educational Cooperative	Hazard KY
Magnolia Speech School	Magnolia MS
Memphis City School District	Memphis TN
Meridian Separate School District	Meridian MS

CONTRIBUTORS (Con't)

SCHOOL DISTRICTS Cont'd.

Metropolitan Public School Food Service	Nashville TN
Montgomery County School Food Service	Rockville MD
Muscogee County School District	Columbus GA
New Hanover County School Food Service	Wilmington NC
New York City Public School District	New York NY
Ohio Valley Educational Cooperative	Louisville KY
Philadelphia School District	Philadelphia PA
Portland Public Schools	Portland OR
Prince George County Public Schools	Upper Marlboro MD
Provo School District	Provo UT
Reidsville City School Food Service	Reidsville NC
Richland County School District	Columbia SC
Rock Hill School District	Rock Hill SC
San Juan Unified School District	Carmichael CA
Seattle School District No. 1	Seattle WA
Spartanburg County School Food Service	Spartanburg SC
Souderton Area School District	Souderton PA
Three Rivers Consortium	Aberdeen MS
Twin Falls School Lunch	Twin Falls ID
Ventura Unified School District	Ventura CA
Washington County School Cafeterias	Hagerstown MD
West Point Separate School District	West Point MS
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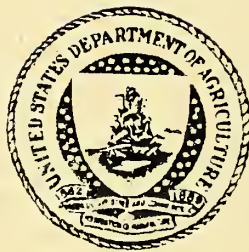
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